

Appendices

Appendices

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Section A-A

Clinical Procedures

and Equipment

Reference

Nasotracheal Intubation

Paramedic	◆
EMT Intermediate	◆
EMT Basic	

Nasotracheal intubation is used for long-term intubation because it is thought to be more comfortable for the patient than orotracheal intubation. It is also used when access to the trachea through the oropharynx is difficult due to patient presentation or condition. Nasotracheal intubation may be used for conscious patients in whom definitive airway control is needed or cervical spine trauma may be aggravated by utilizing the orotracheal route.

INDICATIONS

- Patients in need of intubation but in whom orotracheal intubation is not possible or practical

CONTRAINDICATIONS

- Apnea
- Patient age less than 12 years
- Coagulopathies (i.e., patients on coumadin, warfarin, history of hemophilia, liver cirrhosis etc.)
- Severe maxillofacial or nasal trauma with potential of a cribriform plate fracture
- Patients suspected of experiencing elevated ICP
- Use with caution in
 - Acutely hypertensive patients

NOTES/PRECAUTIONS

- Selection of tube size
 - Start with endotracheal tube 0.5 to 1 size smaller what would be appropriate for orotracheal intubation
 - An alternate method is to select an endotracheal tube with an outside diameter just smaller than the diameter of the chosen nostril
 - Avoid using an endotracheal tube that is too small
- Management of the endotracheal tube should be of the highest priority during any movement of an intubated patient
 - Individual securing the tube is in charge of directing patient movement
 - BVM is to be disconnected from the tube during any transitional movement including
 - Log-rolling patient onto a backboard
 - Moving patient onto a stretcher
 - Loading and unloading from ambulance or helicopter
 - Transfer to the hospital stretcher
 - The tube is to be reassessed following any patient movement
 - Any time the proper placement of the tube cannot be verified, it is to be immediately removed and BVM ventilation started

PROCEDURE

1. Body Substance Isolation (BSI)
2. Determine proper tube size
3. Spray vasoconstrictor into selected nostril to shrink nasal passages and decrease risk of bleeding
4. Prepare endotracheal tube by “wrapping” tube into a circular shape and allowing it to remain in that shape for 1 minute
5. Lubricate tube with Lidocaine jelly and attach Beck Airway Airflow Monitor (BAAM®)
6. Tilt patient’s head into the “forward sniffing” position to facilitate entry of the tube into the nostril and nasal air passage
7. Grasp endotracheal tube similar to grasping a pencil with distal tip pointing posteriorly into the selected nostril, bevel toward the septum
 - This prevents abrasion of Kiesselbach’s plexus or injury to the turbinates
8. Insert tip of the tube into the right naris and advance into the nostril
 - Advance tube into the nostril in an anterior-to-posterior direction
 - Slight back-and-forth rotation of the tube may facilitate passage through the nostril and into the pharynx
 - If firm resistance is felt, do not force the tube. Withdraw and try the other nostril.
9. Once the tube has successfully advanced through the nose and into the pharynx
 - Listen closely to the breath sounds at the proximal end of the tube and observe tube for condensation
 - When breath sounds are the loudest (or the BAAM® is whistling loudest) and misting of the tube is most prominent, stop further advancement
 - If patient is conscious
 - Ask him/her to take a deep breath
 - Gently advance the tube 1-1.5 inches during inhalation
 - If patient is unconscious
 - When patient inhales, quickly but gently, advance tube 1-1.5 inches
 - Patient should begin to cough and misting will occur in the tube
10. Attach ETCO₂ monitoring device to confirm placement
11. Secure tube with either a commercial device or tape
 - Do not let go of the tube until secured
12. Apply an appropriately sized cervical collar immediately following successful placement and securing of the tube
 - No exceptions
13. If patient is to be transported, they are to be placed on a backboard and secured
 - Adult and pediatric patients
 - The only exception would be patients who cannot tolerate a supine position (i.e. awake patient in respiratory distress, patient with pulmonary edema, etc.)

Needle Cricothyrotomy

Paramedic	◆
EMT Intermediate	
EMT Basic	

Needle cricothyrotomy involves the puncture of the cricothyroid membrane at a caudal angle with a 14 to 18 gauge kink resistant over-the-needle plastic catheter. It offers a temporizing, alternative approach to airway management. It does not substitute for airway control with a BVM or cuffed endotracheal tube, yet may prove valuable in the initial stabilization of patients not able to be ventilated with a bag-valve-mask or intubated as it allows a degree of oxygenation with no significant ventilation. It should always be considered a temporary maneuver.

INDICATIONS

- Patients 3-10 years of age
 - With obstructed airway and
 - Requiring emergency assisted ventilation and
 - In whom all conventional methods of ventilation have failed

CONTRAINDICATIONS

- Anytime a less invasive maneuver would allow ventilation of the patient
- Patient less than 3 or more than 10 years of age
- Tracheal transection

NOTES/PRECAUTIONS

- Cricothyroid membrane
 - 1 to 1.5-cm membrane that lies inferior to the thyroid cartilage and superior to the first tracheal ring
 - To locate
 - Palpate the protuberant midline portion of the thyroid cartilage ("Adams apple")
 - Move the fingertip inferiorly 1.5 cm until it rests in the soft, flat depression between the thyroid cartilage and the first tracheal ring
- Management of the catheter and ET tube adapter should be of the highest priority during any movement of the patient
 - Individual completing the procedure is in charge of directing patient movement
 - BVM is to be disconnected from the ET tube adapter during any transitional movement including
 - Log-rolling patient onto a backboard
 - Moving patient onto a stretcher
 - Loading and unloading from ambulance or helicopter
 - Transfer to the hospital stretcher
 - The catheter is to be reassessed following any patient movement
- Appropriate size angiocath is generally 14-18 gauge, depending on size of the child

PROCEDURE

1. Body Substance Isolation (BSI)
2. Position patient supine with head slightly extended
 - Extension of the neck is contraindicated in the presence of suspected cervical spine trauma
3. Prepare anterior surface of the neck with betadine or alcohol
4. Locate the cricothyroid membrane
5. Place thumb and index finger of non-dominant hand on either side of the tracheal cartilage to stabilize the trachea and anchor and stretch the skin slightly
6. Connect appropriate sized angiocath to a 12 cc syringe
7. Pierce the skin and cricothyroid membrane at a 45-degree angle, directing the catheter tip inferiorly while pulling suction on the syringe
 - Aspiration of free air confirms entry into the tracheal lumen
 - When catheter tip enters the tracheal lumen a slight “give” will be felt
 - Patient may cough when catheter stimulates the tracheal wall. Slide catheter sheath forward until it is snug against the skin
8. Withdraw needle
9. Connect catheter to 2.5 to 3.0 mm pediatric ET tube adapter
10. Attach a BVM to the pediatric tube adapter and begin ventilating
11. Confirm proper placement
12. With hub of catheter snug against the neck, tape catheter firmly in place
 - Catheter and ET tube adapter are to be secured at all times by hand
 - Catheter should be secured with tape and benzoin to prevent slipping
13. Apply an appropriately sized cervical collar immediately following successful placement and securing of the catheter
 - No exceptions
14. If patient is to be transported, they are to be placed on a backboard and secured. The only exception would be patients who cannot tolerate a supine position (i.e. awake patient in respiratory distress, patient with pulmonary edema, etc.)

Orotracheal Intubation

Paramedic	◆
EMT Intermediate	◆
EMT Basic	

Orotracheal intubation involves the placement of a tube directly into the trachea providing a direct route for ventilation, medication administration, airway protection, or suctioning of the trachea and upper bronchial tree. If the patient requires orotracheal intubation and is suspected of having a cervical spine injury, the neck must be held manually in a neutral position.

INDICATIONS

- Inadequate oxygen exchange or depressed ventilatory state
- Need to provide airway protection in obtunded patient with a depressed gag reflex
- Prophylactically (with PAI) in the patient suspected having suffered inhalation injuries

CONTRAINDICATIONS

- None in the presence of the need for definitive airway management

NOTES/PRECAUTIONS

- Management of the endotracheal tube should be of the highest priority during any movement of an intubated patient
 - Individual securing the tube is in charge of directing patient movement
 - BVM is to be disconnected from the tube during any transitional movement including
 - Log-rolling patient onto a backboard
 - Moving patient onto a stretcher
 - Loading and unloading from ambulance or helicopter
 - Transfer to the hospital stretcher
 - The tube is to be reassessed following any patient movement
 - Any time the proper placement of the tube cannot be verified, it is to be immediately removed and BVM ventilation started

PROCEDURE

1. Prior to any attempt, hyperoxygenate patient with 100% oxygen for at least 1 minute
2. Position patient's head in the "sniffing" position
 - Extension of the neck is contraindicated in the presence of suspected cervical spine trauma
 - Extreme caution must be exercised in positioning an infant's head as hyperflexion can result in airway obstruction
3. Attach pulse oximeter and monitor oxygen saturation readings

4. Technique
 - Curved blade
 - Open patient's mouth with the right hand
 - Remove any dentures that are present
 - Grasp laryngoscope in left hand and spread the patient's lips, inserting blade between the teeth
 - Pass blade to the right of the tongue and advance into the hypopharynx, sweeping the tongue to the left
 - Lift the laryngoscope upward and forward, without changing the angle of the blade
 - Insert tip of the blade into the vallecula, indirectly lifting the epiglottis and exposing the vocal cords
 - Straight blade
 - Follow steps as outlined for curved blades, but advance blade down the hypopharynx, and lift the epiglottis with the tip of the blade to expose the vocal cords
 - For patients <2 years old, the straight blade is preferred because it provides greater displacement of the tongue and better visualization of the glottic opening
5. Having visualized the glottis and vocal cords pass tube through the vocal cords far enough so that balloon cuff is just beyond the cords
 - In pediatric patients, the tube should be placed only 5 to 10 mm past the vocal cords.
 - Withdraw stylet if used
6. Attach BVM and begin ventilation with 100% oxygen
7. Confirm tube is properly positioned
 - Attach ETCO₂ monitoring device and follow guidelines for use
 - Auscultate over the stomach
 - If sounds are heard over the stomach, remove tube, hyperventilate patient, and reattempt
 - Auscultate right and left lung fields
 - If left chest has more distant breath sounds than right, gently pull back on the tube until equal air exchange is heard
 - In pediatrics, listen over the mid-axillary regions of the chest wall to avoid false breath sounds emanating from across the small chest wall
8. Secure tube with either an approved commercial device or tape
 - Do not let go of the tube until secured
9. Apply an appropriately sized cervical collar immediately following successful placement and securing of the tube
 - No exceptions
10. If patient is to be transported, they are to be placed on a backboard and secured
 - Adult and pediatric patients
 - The only exception would be patients who cannot tolerate a supine position (i.e. awake patient in respiratory distress, patient with pulmonary edema, etc.)

Surgical Cricothyrotomy

Paramedic	◆
EMT Intermediate	
EMT Basic	

Cricothyrotomy is a surgical procedure used to gain airway control. It involves making an incision through the cricothyroid membrane and inserting a cuffed endotracheal tube through the incision. This is a temporary measure to ensure an airway when other methods have failed.

INDICATIONS

- Patient over 10 years of age
 - With obstructed airway and
 - Requiring emergency assisted ventilation and
 - In whom all conventional methods of ventilation have failed
- Patient in the air medical environment unable to be ventilated by any means following RSI

CONTRAINDICATIONS

- Anytime a less invasive maneuver would allow ventilation of the patient
- Patient less than 10 years of age
- Tracheal transection
- Fractured larynx or significant damage to the cricoid cartilage or larynx

NOTES/PRECAUTIONS

- Cricothyroid membrane
 - 1 to 1.5-cm membrane that lies inferior to the thyroid cartilage and superior to the first tracheal ring
 - To locate
 - Palpate the protuberant midline portion of the thyroid cartilage ("Adams apple")
 - Move the fingertip inferiorly 1.5 cm until it rests in the soft, flat depression between the thyroid cartilage and the first tracheal ring
- Management of the endotracheal tube should be of the highest priority during any movement of the patient
 - Individual securing the tube is in charge of directing patient movement
 - BVM is to be disconnected from the tube during any transitional movement including
 - Log-rolling patient onto a backboard
 - Moving patient onto a stretcher
 - Loading and unloading from ambulance or helicopter
 - Transfer to the hospital stretcher
 - The tube is to be reassessed following any patient movement
 - Any time the proper placement of the tube cannot be verified, it is to be immediately removed and BVM ventilation started
- A cuffed 6.0 mm tube is generally appropriate
 - Avoid uncuffed tubes unless absolutely necessary

PROCEDURE

1. Position patient supine with head slightly extended
 - Extension of the neck is contraindicated in the presence of suspected cervical spine trauma
2. Pre-oxygenate the patient as best as possible
3. Prepare anterior surface of the neck with betadine or alcohol
4. Locate the cricothyroid membrane
5. Place thumb and index finger of non-dominant hand on either side of the tracheal cartilage to stabilize the trachea and anchor and stretch the skin slightly
6. Holding the scalpel between the thumb and index finger in such a way that only the tip of the blade can enter the trachea to the depth desired, make a horizontal skin incision 3 to 4 cm. (1 to 1.5 inches) in length over the cricothyroid membrane
7. Once the cricothyroid membrane is visualized, carefully incise through the membrane transversely
 - Do not stop to control bleeding, only remove blood if needed to visualize incision site
8. Bluntly dissect the opening by inserting small gloved finger into the incision, rotating it 90 degrees to enlarge the incision site and help make a patent airway
9. Insert appropriately sized cuffed ET tube through the incision
10. Attach BVM and begin ventilating
11. Confirm proper placement
12. Secure tube
13. Apply an appropriately sized cervical collar immediately following successful placement and securing of the tube
 - No exceptions
14. If patient is to be transported, they are to be placed on a backboard and secured
 - Adult and pediatric patients
 - The only exception would be patients who cannot tolerate a supine position (i.e. awake patient in respiratory distress, patient with pulmonary edema, etc.)



Section A-B

Clinical Procedures

and Equipment

Reference

End-Tidal CO₂ Monitoring Capnometry

Paramedic	◆
EMT Intermediate	◆
EMT Basic	

End-tidal carbon dioxide (ETCO₂) detectors measure the concentration of exhaled carbon dioxide and are extremely useful in assessing proper placement of an endotracheal tube. An absence of measured carbon dioxide in the patient's exhaled air may indicate tube placement in the esophagus, while the presence of carbon dioxide after six full breaths usually indicates proper tracheal placement. Proper tube placement is confirmed by a color change in the colorimetric device by a reaction of CO₂ with the litmus paper inside the detector. As with pulse oximetry, an ETCO₂ detector is an addition to other methods (direct visualization, bilateral breath sounds, etc.) for confirmation of proper endotracheal tube placement.

INDICATIONS

- As an adjunct to confirm proper tube placement on all endotracheal or nasotracheal intubations
- On intubated patients to detect approximate ranges of end-tidal CO₂ when measurement may be clinically significant.

CONTRAINDICATIONS

- Not used to detect main-stem bronchial intubation
- Not for use during mouth-to-tube ventilation

NOTES/PRECAUTIONS

- Due to potential increased airway resistance, do not use Pedi-Cap on patients weighing >15 kg
- Reflux of gastric contents, mucous, edema fluid, endotracheal medication administration, or nebulization can discolor detector. Contamination of this type may increase resistance, alter color changes, and affect ventilation. If this occurs, discard the device.

PROCEDURE

1. Select appropriate detector according to patient size and weight. Remove detector from packaging
 - Patient >15 kg - Easy-Cap
 - Patients <15 kg - Pedi -Cap
2. Match initial color of indicator to the PURPLE color labeled CHECK around the detector window
 - If the purple color of the indicator is not the same color, or darker, than the area marked CHECK, do not use the detector
 - If the indicator color appears pink, the separate color chart for fluorescent light must be used for accurate color matching
3. Insert endotracheal tube and inflate cuff, if equipped
4. Deliver six ventilations of moderate tidal volume
 - Interpreting results before confirming 6 breath cycles can yield false results
5. After six breaths, attach detector to endotracheal tube; then attach BVM to the detector
6. Compare indicator color in the window on full-end expiration. If CO₂ is detected, the PURPLE CHECK color will change to TAN (Range C).
7. If the results are not conclusive, and correct anatomic location cannot be confirmed with certainty by other means, the endotracheal tube should be immediately removed and reinserted.

Gastric Tube Insertion

Paramedic	◆
EMT Intermediate	◆
EMT Basic	

Gastric tubes are of limited use in the prehospital environment. Their use should be restricted to adult and pediatric resuscitation, for gastric decompression after endotracheal intubation, and when requested by On-Line Medical Control. If the nasal route is unavailable, the orogastric route may be used.

INDICATIONS

- Adult and pediatric cardiac arrest following endotracheal intubation
- When requested by On-Line Medical Control

CONTRAINDICATIONS

- Actual or suspected laceration or perforation of the esophagus
- Suspected fractures of the cribriform plate as evidenced by severe maxillofacial trauma
- Ingestion of a caustic substance
- Anticoagulant use (e.g., coumadin, warfarin) or disorders of coagulopathy (hemophilia)

NOTES/PRECAUTIONS

- The procedures outlined below will be the same for an unconscious patient, but without the luxury of the patient swallowing while inserting the tube.
- In the unconscious patient, the tube tends to coil up into the oropharynx and pharynx much easier making careful observation of tube placement crucial.

PROCEDURE

1. Body Substance Isolation (BSI)
2. Select appropriate sized tube according to patient size and measure the correct length for insertion.
 - To measure length: While holding the distal end of the tube, measure the distance from the patient's earlobe to the bridge of his/her nose, and additionally from there to a point just below the xyphoid process.
 - Mark this length with a piece of tape to serve as a future guide point.
3. Have patient sit upright and lean slightly forward with his/her neck slightly flexed.
 - Flexion is contraindicated if cervical spine injury is suspected.
4. Lubricate distal 3 to 6 inches of the tube (preferably with lidocaine jelly) and select the most widely patent nostril
5. With free hand, support the back of the patient's head and gently move it forward into a slightly flexed position while you insert the tip of the tube into the selected nostril
 - Flexion is contraindicated if cervical spine injury is suspected
6. Advance tube straight back (in an anterior-to-posterior direction, not cephalad) into the nostril. If resistance is felt, rotate tube slightly to help advance it into position.
7. As tube reaches the posterior nasopharynx the patient is likely to gag. At this point, if the patient is able to do so, and it is not contraindicated, have the patient swallow a small amount of water.
8. Continue to insert the tube past the glottic opening into the esophagus. Continue to insert the tube into the nose until the pre-measured mark reaches the front edge of the nostril
9. After reaching the predetermined mark and confirming that the tube has not curled up into the oropharynx or pharynx, aspirate 20 to 30 mL of air into a 60 mL syringe. While listening over the

epigastrium, inject the air into the tube and listen for “gurgling” to indicate proper placement. Aspirate and observe for gastric contents (may not always be present).

- 10.** If no sounds are heard over the epigastrium, and you notice fogging or misting in the tube, or patient cannot cough or speak, immediately withdraw the tube and oxygenate the patient
- 11.** If tube placement has been confirmed, securely tape the proximal end where it enters the nostril to the bridge of the nose.
- 12.** After tube is firmly secured, connect the proximal end to suction device and aspirate as needed

Official

Pleural Decompression

Paramedic	◆
EMT Intermediate	
EMT Basic	

Tension pneumothorax is a life-threatening condition. The definitive prehospital treatment is rapid decompression of the effected side of the chest through emergency needle decompression. Once the tension pneumothorax has been relieved, close monitoring of the patient is necessary because of the possibility of redevelopment.

INDICATIONS

- Patient with a pulse
 - All of the following must be present
 - Evidence of greatly diminished or absent lung sounds
 - Signs and symptoms associated with severe hemodynamic compromise
 - Increasing air hunger or difficulty with BVM ventilation
 - Rapidly diminishing pulse oximetry readings (if utilized)
- Patient without a pulse
 - All of the following must be present
 - Pulseless electrical activity or asystole
 - Greatly diminished lung sounds
 - Unable to effectively ventilate the patient

If the patient can be adequately ventilated, a tension pneumothorax is usually not present. Search for other causes of PEA.

CONTRAINDICATIONS

- None in the presence of signs and symptoms associated with tension pneumothorax

NOTES/PRECAUTIONS

- Classic signs of a tension pneumothorax
 - Progressive shortness of breath
 - Absence of breath sounds on the affected side
 - Distended neck veins
 - Cyanosis
 - Hypotension
 - Tracheal deviation away from the effected side
 - This is a late sign
- Identifying point of entry
 - Palpate the sternomanubrial junction (Angle of Louis) located at the junction of the upper and middle thirds of the breastbone
 - Move the fingers laterally to palpate the second intercostal space
 - With the index finger on the Angle of Louis and the middle finger in the 2nd intercostal space, palpate the upper edge of the third rib in the midclavicular line. This is the point of entry.

➤ **PROCEDURE**

1. Prepare equipment
 - Assemble the needle and syringe
 - If time and patient condition allows, place patient on pulse oximeter
 - Do not delay procedure in order apply ancillary equipment when rapid decompression is needed
2. Identify point of entry
3. Having located the upper edge of the third rib, place the tip of the needle against the skin at the midclavicular line and hold it so the hub is just lower than the tip
4. Insert needle, pointing posteriorly but slightly upward, sliding it over the top curve of the third rib
 - As decompression occurs a rush of air may be heard and the barrel of the syringe will be pushed back
 - Once decompression has occurred, and, prior to threading the catheter into the chest wall, pull back on the needle slightly to withdraw the tip into the catheter
 - This will prevent inadvertent laceration of lung tissue by the needle tip
5. Once catheter hub is snug against the skin, remove needle and syringe, and attach the one-way flutter valve to the hub of the catheter
 - Ensure one-way valve is properly positioned for air escape
6. Apply benzoin around the hub on the chest wall and securely tape catheter into place
7. Auscultate the chest and reassess the patient's respiratory status and vital signs
8. Periodically inspect the flutter valve for effectiveness
 - Valve may become occluded with blood or other fluids
 - Flutter valve may be replaced as needed

Pulse Oximetry

Paramedic	◆
EMT Intermediate	◆
EMT Basic	◆

If respirations are compromised, even slightly, oxygen saturation will fall. The pulse oximeter is a quick and accurate tool that can objectively determine the oxygenation status of the patient. The pulse oximeter functions by measuring transmission of red and infrared light through an arterial bed, such as those present in a finger, toe, or earlobe. The reliability and validity of the pulse oximeter is well documented and the device is widely used in a variety of settings.

INDICATIONS

- As an adjunct to patient assessment
- Any patient who receives a narcotic, sedative, or paralytic medication
- Before, during, and after endotracheal intubation

CONTRAINDICATIONS

- None

NOTES/PRECAUTIONS

- Specific circumstances that may result in inaccurate pulse oximetry readings
 - States of decreased perfusion
 - Hypotension
 - Hypothermia
 - Carbon monoxide poisoning
 - Methemoglobinemia
 - Excessive ambient light (sunlight, florescent lights) on the pulse oximeter probe

PROCEDURE

Pulse oximeters are widely available from a number of manufactures in a variety of models. Specific operating instructions will be dependent on the model utilized.

Section A-C

Clinical Procedures

and Equipment

Reference

Alternative Venous Access

Paramedic	◆
EMT Intermediate	
EMT Basic	

With advancements in home health care, an increasing number of patients are being released to their homes with implanted venous access devices. These include double, triple, multi-lumen, and implanted medication ports. This is in addition to the existing population of patients with implanted AV-fistulas and AV-grafts used in dialysis. **Alternate venous access is only to be used in life-threatening situations.**

INDICATIONS

- Venous access when traditional means are unsuccessful
 - Only in those patients with life-threatening situations such as cardiac arrest, lethal arrhythmias, or in-extremis from a readily treatable cause (i.e., CHF)

CONTRAINDICATIONS

- Patients where traditional IV access is available

NOTES/PRECAUTIONS

- Venous access devices can be complicated. Consider contact with OLMC for guidance.
- Alternate access devices provide a direct line into patient circulation; therefore, the introduction of air can be extremely hazardous.
 - Do not remove injection cap from catheter or allow IV fluids to run dry.

PROCEDURE

BROVIAC / HICKMAN / GROSHONG AND OTHER DOUBLE AND TRIPLE LUMEN CATHETERS

Silicone tube inserted into the distal superior vena cava or right atrium, usually via the cephalic vein. The catheter enters the skin through an incision in the chest. Most lines are kept heparinized and protected via an injectable cap.

1. Select appropriate port for access. If two are available, access the blue or brown port
2. Thoroughly cleanse injectable port cap
3. Insert an 18-gauge needle attached to a 12 cc syringe into injectable port cap and aspirate 10 mL of blood from catheter (this prevents an inadvertent anticoagulant bolus from occurring). Dispose of aspirated blood.
 - If ports are needless, use appropriate needless adapter
 - If at any time you are unable to aspirate blood or infuse fluids, do not use line as clotting may have occurred
4. Attach IV line (attached to an 18-20 gauge needle) into injection port. Begin IV fluid flow and adjust appropriately.
5. Medications are injected through the IV lifeline

PICC LINE

Peripherally Inserted Central Catheter. Usually inserted into the right atrium via the antecubital vein.

1. Select a port on one of the catheters. When two sizes are available, select the larger. Cleanse port with alcohol
2. Attach a needle to a 10 cc syringe and draw up 5 cc of normal saline (NS). Insert needle into port and attempt to inject NS. If resistance is met, withdraw needle and attempt same procedure on

different port. Do this until you find catheter that does not present with resistance to administration of NS. If resistance continues, do not use either port.

3. When no resistance is met, inject contents of syringe into catheter and then draw back to achieve blood flash, indicating successful access.
4. Remove syringe, attach IV tubing, and proceed as normal, opening line and insuring patency.

INTERNAL SUBCUTANEOUS INFUSION PORTS

Unless patient is in cardiac arrest, access should not be attempted without specialized Huber needle.

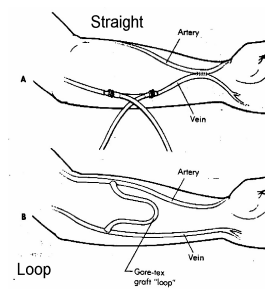
1. Patients with a pulse: Inquire if patient has Huber needles available. If so, proceed as outlined. If no Huber angle needles are available, DO NOT ACCESS PORT WITH REGULAR NEEDLES.
2. Patients in cardiac arrest: Access may be obtained using a regular 18 gauge needle when Huber needles are not available. Do not use unless absolutely necessary as a regular needle may destroy the self- sealing core, rendering the port useless.
3. Locate the sight by visualization and palpation. These ports are generally found in the upper chest and present as a dome shaped protrusion.
4. Prepare sight as if starting an IV.
5. Using a non-coring Huber angle needle attached to a syringe, insert into the sight at a 90-degree angle until resistance is met.
6. Inject saline into port and aspirate blood. If resistance is met or blood cannot be aspirated, withdraw needle and do not attempt further access at this sight.
7. With successful attempt, remove syringe, attach IV tubing, and proceed as normal, opening line and insuring patency.

HEMODIALYSIS AV-FISTULAS / AV-GRAFTS

A tube that diverts blood flow from an artery to a vein. Typically seen in renal failure patients.

1. Prior to access, check site for bruit and thrills, if none are present do not use.
2. Access fistula on venous side (side with weaker thrill in patient with a pulse) using 18 to 16 gauge angiocath in the same manner as intravenous access
 - Remove catheter, and use only the needle if accessing an AV-Graft to avoid tearing synthetic material.
 - If patient does not have a pulse, either side may be accessed.
3. Inflate BP cuff around IV bag to maintain flow of IV fluids.
4. If unsuccessful in accessing site (no obvious blood return or flow of fluids), hold direct pressure over site for 5-8 minutes for a fistula and 8-15 minutes for a graft to prevent hemorrhaging. Do not continue attempting to access.

Multi-lumen Catheter	Internal Subcutaneous Port	PICC Line	Hemodialysis Fistula/Graft
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Cardiac Pacing

LIFEPAK 11 or 12

Paramedic	◆
EMT Intermediate	
EMT Basic	

In transcutaneous pacing, the heart is stimulated with externally applied cutaneous electrodes that deliver an electrical impulse. This impulse is conducted across the intact chest wall to hopefully stimulate myocardial activity. The mean current required for electrical capture can vary significantly, but is usually 50 to 100 milliamperes (mA).

INDICATIONS

- Hemodynamically unstable bradycardia (SBP <100 mm Hg, change in mental status, angina, AMI, CHF)
- As the initial intervention in suspected ischemic disease
- Symptomatic bradycardia in the patient who has had a denervated heart.

CONTRAINDICATIONS

- Hypothermia with a temperature <86 degrees F
- Children <90 pounds

NOTES/PRECAUTIONS

- If capture fails with electrodes in the anterior-anterior position, consider an anterior-posterior position and re-attempt pacing.
- Maximum output of the LIFEPAK 10, LIFEPAK 11, and LIFEPAK 12 is 200 mA

PROCEDURE

1. In conscious patients with excessive body hair, clip rather than shave hair to avoid nicks in the skin that can increase pain and skin irritation
2. Attach appropriate pads and monitoring leads
 - LIFEPAK 11 or 12: Place one electrode over the upper right anterior chest and the other electrode on the left lower chest wall
 - LIFEPAK 10: Place anterior (-) electrode to the left of the sternum and center as closely as possible to the point of maximal cardiac impulse. Place the posterior (+) electrode on the back, directly behind the anterior electrode to the left of the thoracic spinal column.
3. Adjust gain up or down until there is adequate QRS height for the pacemaker to sense and mark
 - If unsuccessful, select another lead or move ECG electrodes until sensing occurs.
4. Power pacemaker module by pressing "PACER" softkey and confirm the presence of QRS markers on the ECG
5. If not already defaulted, set initial pacing rate at 80 beats per minute
6. Press "START/STOP" button to begin pacing: Observe for vertical pacing spikes.
7. Bradyasystolic Arrest
 - Rapidly increase milliamperes until electrical capture occurs or the maximum of 200 mA has been reached
 - Increase mA in increments of 20 if using an LIFEPAK 11
 - Increase mA in increments of 10 if using a LIFEPAK 12
 - Electrical capture is recognized by the presence of a consistent and widened QRS, ST segment, and T wave immediately after each pacer spike

- Do not reduce mA once capture occurs
- 8. Hemodynamically Unstable Bradycardia
 - *Slowly* increase mA in increments of 5 until electrical capture occurs
 - Do not reduce mA once capture occurs
- 9. Assess the patient for mechanical capture and response to pacing
- 10. Pulses should be assessed at the right femoral or right carotid artery to avoid confusion between a pulse and the jerking muscle contractions caused by the pacemaker .

Official

Cardioversion

Paramedic	◆
EMT Intermediate	
EMT Basic	

A properly connected defibrillator/monitor placed in synchronization (“sync”) mode searches for the peak of the QRS complex (or R-wave deflection) and delivers the shock a few milliseconds after the highest part of the R-wave. This programmed approach avoids shock delivery during the “vulnerable period” of cardiac repolarization, the T-wave, when such shocks are more likely to induce VF.

INDICATIONS

- Unstable ventricular tachycardia with a pulse
- Unstable paroxysmal supraventricular tachycardia
- Unstable atrial fibrillation/flutter with a rapid ventricular response

CONTRAINDICATIONS

- Repetitive, self-terminating, short-lived tachycardias (i.e., runs of non-sustained VT)
- Unstable Torsade de pointe (should be treated as VF and defibrillated beginning at 200J)

NOTES/PRECAUTIONS

- In order to be considered unstable, patients must present with one or more of the following
 - Chest pain, shortness of breath, decreased LOC, shock, CHF, acute MI in progress
- When treating infants and children suffering from SVT, there may be a significant delay (up to 5 seconds) prior to shock being delivered

PROCEDURE

1. Confirm that the rhythm on the monitor coincides with a patient in an unstable condition
2. Depress the synchronize button, watching for R wave markers on each QRS complex.
 - If the R wave markers do not appear, or appear elsewhere on the ECG, adjust the ECG size or gain up or down until they appear on each R-wave.
 - If markers still do not appear, select another lead or reposition the ECG electrodes.
3. Select the appropriate energy level:
 - Adult
 - Monomorphic Ventricular Tachycardia: 100J, 200J, 300J, and 360J.
 - Supraventricular Rhythms (PSVT/A. Flutter): 50J, 100J, 200J, 300J, and 360J.
 - Supraventricular Rhythms (Atrial Fibrillation): begin at 100J, 200J, 300J, and 360J.
 - Pediatric
 - Presumptive Ventricular Tachycardia: Begin with 0.5J /kg, double to 1 J/kg if still indicated
 - Supraventricular Rhythms (PSVT/AF/A. Flutter): Begin with 0.5 J/kg, double to 1J/kg.
4. Hand-held paddle system- Apply defibrillation gel or paste to paddles and confirm each is well coated. Apply paddles in the sternum/apex position using approximately 25 lb. of pressure
5. Hands-free electrodes- Apply self-adhesive pads in the sternum/apex position, ensuring firm contact with patient's skin.
6. Charge defibrillator to desired energy level and clear all personnel from direct patient contact
7. Depress and hold both discharge buttons until electrical charge is delivered
8. Reassess the patient. If rhythm deteriorates into VF/pulseless VT, switch to asynchronous mode and immediately defibrillate

ECG Monitoring / 12-Lead LIFEPAK 11 and 12

Paramedic	◆
EMT Intermediate	◆
EMT Basic	◆

Most modern 12-lead ECG monitors record all 12-leads simultaneously, but display them in the conventional 3 row by 4 column format. The primary advantages of using a 12-lead ECG monitor are speed and accuracy. Because the leads are obtained simultaneously, only 10 seconds of sampling time is required. The 12-lead monitor allows evaluation of the patient for ischemia or infarction and dramatically facilitates care of the acute MI when used as a system.

INDICATIONS

- Patient conditions as described in Patient Care Guidelines

CONTRAINDICATIONS

- None

NOTES/PRECAUTIONS

- When placing electrodes on female patients, always place leads V3-V6 under the breast rather than on the breast.
- Never use the nipples as reference points for locating the electrodes on men or women because nipple locations may vary widely
- Placement of leads and acquisition of 12-lead ECG is appropriate for all level Providers once they are properly trained. Interpretation of reports is only appropriate for Providers Credentialed at the EMT-P.

PROCEDURE

11. Prep skin as time and patient condition allows
 - Shave excess hair
 - Wipe with alcohol
 - Dry skin with towel
12. Attach precordial lead electrodes to patient's chest
 - V1 4th Intercostal space, right side of the sternum
 - V2 4th Intercostal space, left side of the sternum
 - V3 Directly between leads V2 and V4
 - V4 5th Intercostal space at midclavicular line
 - V5 Level with V4 at left anterior axillary line
 - V6 Level with V5 at left midaxillary line
13. Attach limb leads
 - Right & left forearms, volar surface
 - Right and left legs, anteromedial tibial surface
 - May be placed more proximal if distal positions are not accessible
14. Acquiring 12-lead ECG
 - Attach precordial cable to 4-lead patient ECG cable
 - Enter appropriate patient demographic data
 - Press "12-LEAD" to obtain 12-lead ECG report

Endotracheal Medication Administration

Paramedic	◆
EMT Intermediate	◆
EMT Basic	

Because of the large surface area of the alveoli and vast blood supply of the pulmonary capillary beds that return blood to the left heart, drugs administered through the trachea are rapidly absorbed and delivered to the heart for distribution. Several different drugs may be administered down the endotracheal tube, but it is important to deliver them in sufficient volume to ensure that they do not merely adhere to the inside of the tube.

INDICATIONS

- Intubated patients requiring any of the identified medications when intravenous or intraosseous access is not obtainable

CONTRAINDICATIONS

- Administration of medications not identified

NOTES/PRECAUTIONS

Medications Allowable Via Endotracheal Route

	Provider Level	Adult Dosing	Pediatric Dosing
Lidocaine	ALS	2 to 2.5 times IV dose	1 mg/kg
Atropine	ALS	2 to 2.5 times IV dose 1:10,000 solution	0.02 mg/kg 1:1,000 solution
Naloxone	ILS or ALS	2 times IV dose	0.1 mg/kg
Epinephrine	ALS	2 to 2.5 times IV dose 1:10,000 solution	0.1 mg/kg (0.1 mL/kg of 1:1000 [high] concentration)

PROCEDURE

- Body Substance Isolation (BSI)
- Hyperoxygenate the patient with 100% oxygen
- Disconnect Bag-Valve device from the endotracheal tube connector and instill medication
 - Adults- No more than 5 milliliters at one time
 - Pediatric- No more than 2 milliliters at one time
- Reconnect Bag-Valve device and rapidly hyperventilate patient with 10 full breaths prior to administering remaining amount of medication
- After administering required amount, hyperventilate patient a minimum of 1 minute before repeating administration of any medication
 - Allows for complete dispersal of medication

Infusion Charts

Paramedic	◆
EMT Intermediate	◆ Burn Formula only
EMT Basic	

Adult Dopamine Infusion	Range of Infusion 5-20 mcg/kg/min
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Step 1

Determine Concentration

Mix 400 mg Dopamine in 250 mL NS (Must use 60 drop set)

Step 2

Determine Rate

Patient Weight in Pounds / Kg

Pounds	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300
Kg	36	41	45	50	55	59	64	68	73	77	82	86	91	95	100	105	109	114	118	123	127	132	136
5	7	8	9	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
6	8	9	10	11	12	13	14	15	16	17	18	19	20	21	23	24	25	26	27	28	29	30	31
7	10	11	12	13	14	16	17	18	19	20	21	23	24	25	26	27	29	30	31	32	33	35	36
8	11	12	14	15	16	18	19	20	22	23	25	26	27	29	30	31	33	34	35	37	38	40	41
9	12	14	15	17	18	20	21	23	25	26	28	29	31	32	34	35	37	38	40	41	43	44	46
10	14	15	17	19	20	22	24	26	27	29	31	32	34	36	38	39	41	43	44	46	48	49	51
11	15	17	19	21	23	24	26	28	30	32	34	36	38	39	41	43	45	47	49	51	53	54	56
12	16	18	20	23	25	27	29	31	33	35	37	39	41	43	45	47	49	51	53	55	57	59	61
13	18	20	22	24	27	29	31	33	35	38	40	42	44	47	49	51	53	55	58	60	62	64	66
14	19	21	24	26	29	31	33	36	38	41	43	45	48	50	53	55	57	60	62	64	67	69	72
15	20	23	26	28	31	33	36	38	41	43	46	49	51	54	56	59	61	64	66	69	72	74	77
16	22	25	27	30	33	35	38	41	44	46	49	52	55	57	60	63	65	68	71	74	76	79	82
17	23	26	29	32	35	38	41	43	46	49	52	55	58	61	64	67	70	72	75	78	81	84	87
18	25	28	31	34	37	40	43	46	49	52	55	58	61	64	68	71	74	77	80	83	86	89	92
19	26	29	32	36	39	42	45	49	52	55	58	62	65	68	71	74	78	81	84	87	91	94	97
20	27	31	34	38	41	44	48	51	55	58	61	65	68	72	75	78	82	85	89	92	95	99	102

Adult Dopamine

Drops /
minute

Adult Lidocaine Infusion Range of Infusion 2-4 mg/min

Step 1

Determine Concentration

Mix 1 gm Lidocaine in 250 mL NS (Must use 60 drop set)

Step 2

Determine Rate

Dose in mg/min

2	3	4
30	45	60

Drops / minute

Adult Lidocaine

Pediatric Dopamine Infusion

Range of Infusion 5-20 mcg/kg/min

Step 1

Determine Concentration

Concentration: mg Dopamine in 250 mL NS (Must use 60 drop set)
mL Dopamine in 250 mL NS (Must use 60 drop set)

Pt weight (Kg)	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
mg Dopamine	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38
mL Dopamine	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.8	0.8	0.9	0.9	1.0

(mL Dopamine using 40mg/mL packaging)

Pt weight (Kg)	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
mg Dopamine	40	42	44	46	48	50	52	54	56	58	60	62	64	66	68	70	72
mL Dopamine	1.0	1.1	1.1	1.2	1.2	1.3	1.3	1.4	1.4	1.5	1.5	1.6	1.6	1.7	1.7	1.8	1.8

Place in 250 mL NS

Step 2

Determine Rate

Dose in mcg / kg / min

Drops / minute	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	38	45	53	60	68	75	83	90	98	105	113	120	128	135	143	150

Concentration based on (Pt weight in kg X 2) = mg in 250 mL NS

Pediatric Epinephrine Infusion

Range of Infusion 0.1 - 1.0 mcg/kg/min

Step 1

Determine Concentration

Concentration: mg Epi 1:1000 in 250mL NS (Must use 60 drop set)

Pt Kg	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
mg Epi	0.2	0.3	0.4	0.5	0.6	0.6	0.7	0.8	0.9	1	1	1.1	1.2	1.3	1.4	1.4	1.5	1.6	1.7	1.8	1.8	1.9	2

Pt Kg	26	27	28	29	30	31	32	33	34	35	36
mg Epi	2.1	2.2	2.2	2.3	2.4	2.5	2.6	2.6	2.7	2.8	2.9

Place in 250 mL NS

Step 2

Determine Rate

Dose in mcg / kg / min

Drops / minute	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
	19	38	56	75	94	113	131	150	169	188

Concentration based on (Pt weight in kg X 0.06) = mg Epi 1:1000 in 250 mL NS

Pediatric Lidocaine Infusion

Range of Infusion 20-50 mcg/kg/min

Step 1

Determine Concentration

Mix 40 mg Lidocaine in 50 mL NS (Must use 60 drop set)

Step 2

Determine Rate

Weight in Kg

	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Dose in mcg/kg/min	20	5	6	8	9	11	12	14	15	17	18	20	21	23	24	26	27
	25	6	8	9	11	13	15	17	19	21	23	24	26	28	30	32	34
	30	7	9	11	14	16	18	20	23	25	27	29	32	34	36	38	41
	35	8	11	13	16	18	21	24	26	29	32	34	37	39	42	45	47
	40	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54
	45	10	14	17	20	24	27	30	34	37	41	44	47	51	54	57	61
	50	11	15	19	23	26	30	34	38	41	45	49	53	56	60	64	68

	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
Dose in mcg/kg/min	20	30	32	33	35	36	38	39	41	42	44	45	47	48	50	51	53
	25	38	39	41	43	45	47	49	51	53	54	56	58	60	62	64	66
	30	45	47	50	52	54	56	59	61	63	65	68	70	72	74	77	81
	35	53	55	58	60	63	66	68	71	74	76	79	81	84	87	89	92
	40	60	63	66	69	72	75	78	81	84	87	90	93	96	99	102	105
	45	68	71	74	78	81	84	88	91	95	98	101	105	108	111	115	118
	50	75	79	83	86	90	94	98	101	105	109	113	116	120	124	128	131

Parkland Burn Formula

		Must use 60 Drip set																Must use 10 Drip set				
Pt weight lbs		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	80	90	100	110	
Pt weight Kg		2	5	7	9	11	14	16	18	20	23	25	27	30	32	34	36	36	41	45	50	
% BSA	10	6	11	17	23	28	34	40	45	51	57	63	68	74	80	85	91	15	17	19	21	
	20	11	23	34	45	57	68	80	91	102	114	125	136	148	159	170	182	30	34	38	42	
	30	17	34	51	68	85	102	119	136	153	170	188	205	222	239	256	273	45	51	57	63	
	40	23	45	68	91	114	136	159	182	205	227	250	273	295	318	341	364	61	68	76	83	
	50	28	57	85	114	142	170	199	227	256	284	313	341	369	398	426	455	76	85	95	104	
	60	34	68	102	136	170	205	239	273	307	341	375	409	443	477	511	545	91	102	114	125	
	70	40	80	119	159	199	239	278	318	358	398	438	477	517	557	597	636	106	119	133	146	
	80	45	91	136	182	227	273	318	364	409	455	500	545	591	636	682	727	121	136	152	167	
	90	51	102	153	205	256	307	358	409	460	511	563	614	665	716	767	818	136	153	170	188	
100	57	114	170	227	284	341	398	455	511	568	625	682	739	795	852	909	152	170	189	208		

Parkland Burn Formula

Must use 10 Drip set																							
Pt weight lbs	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	350	400		
Pt weight Kg	55	59	64	68	73	77	82	86	91	95	100	105	109	114	118	123	127	132	136	159	182		
% BSA	10	23	25	27	28	30	32	34	36	38	40	42	44	45	47	49	51	53	55	57	66	76	
20	45	49	53	57	61	64	68	72	76	80	83	87	91	95	98	102	106	110	114	133	152		
30	68	74	80	85	91	97	102	108	114	119	125	131	136	142	148	153	159	165	170	199	227		
40	91	98	106	114	121	129	136	144	152	159	167	174	182	189	197	205	212	220	227	265	303		
50	114	123	133	142	152	161	170	180	189	199	208	218	227	237	246	256	265	275	284	331	379		
60	136	148	159	170	182	193	205	216	227	239	250	261	273	284	295	307	318	330	341	398	455		
70	159	172	186	199	212	225	238	252	265	278	292	305	318	331	345	358	371	384	398	464	530		
80	182	197	212	227	242	258	273	288	303	318	333	348	364	379	394	409	424	439	455	530	606		
90	205	222	239	256	273	290	307	324	341	358	375	392	409	426	443	460	477	494	511	597	682		
100	227	245	265	284	303	322	341	360	379	398	417	436	455	473	492	511	530	549	568	663	758		

Intramuscular Injections

Patient Care Setting

Paramedic	◆
EMT Intermediate	◆
EMT Basic	

Intramuscular (IM) injection is the most commonly used route of parenteral medication administration. The drug is injected into the muscle tissue, from which it is absorbed into the blood stream. This method has a predictable rate of absorption, but its onset of action is considerably slower than IV. The only medications approved for off-line IM administration are naloxone, midazolam, diphenhydramine, thiamine, epinephrine (via Epi-auto-injector), Pralidoxime (via auto injector), atropine and glucagon.

INDICATIONS

- When the rate of absorption needs to be slower and/or prolonged in action
- When other administration routes are unsuccessful or unavailable

CONTRAINDICATIONS

- Severe bleeding disorders (i.e., hemophilia) or recent thrombolytic therapy
- States of severe hypoperfusion or shock (exception: Epi-auto-injector for anaphylaxis)
- When rapid absorption and action of a medication is required (i.e., when IV is preferred)

NOTES/PRECAUTIONS

- Appropriate equipment
 - Needles size and length
 - 5/8 to 1 inch for deltoid, 1 to 1.5 inch for larger muscles
 - 22 to 25 gauge for aqueous medications, 21 gauge for oily or thicker medications
 - 3 or 5 ml syringe
 - Alcohol wipe and Band-aids
- Appropriate injection sites
 - Posterior deltoid for injections of 2 mL or less in adults
 - Dorsogluteal site for injections of 2 to 5 mL in adults or 2 mL or less in children >3
 - Vastus Lateralis for injections of 2 mL or less in children and adults
 - Preferred site for use of epinephrine auto-injector
 - Ventrogluteal site for injections of 2 to 5 mL in adults or 2 mL or less in children

PROCEDURE

1. Body Substance Isolation (BSI)
2. Prepare equipment
3. Check label, date, and appearance of medication
4. Locate appropriate injection site
 - Posterior deltoid
 - Identify the bony portion of the shoulder where the clavicle and scapula meet [the acromioclavicular joint (AC)].
 - Measure 3 to 4 fingers-width down the arm from AC joint
 - Slide one to two fingers-width posteriorly on the arm.
 - Dorsogluteal site
 - Identify posterior superior iliac spine

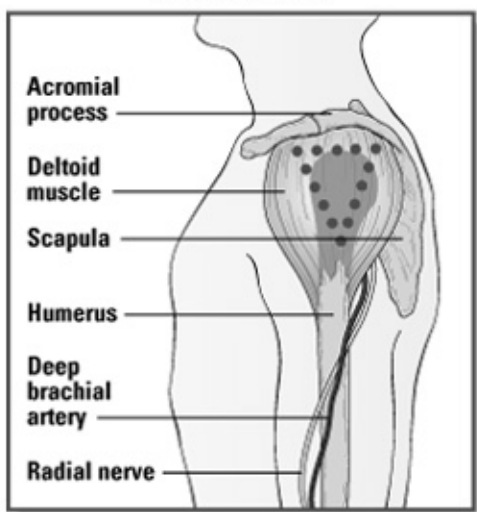
- Draw an imaginary line to the head of the trochanter (if possible, have patient lie prone and point his/her toes inward to help relax the muscles)
- Injection is given lateral and superior to this line
- Vastus lateralis sites
 - Located on the anterior and lateral aspects of the thigh
 - Divide the area into thirds between the greater trochanter of the femur and the lateral femoral condyle
 - Injection is given into the middle third
- Ventrogluteal site
 - Place heel of right palm on patient's greater trochanter of the femur
 - Place index finger on the anterior superior iliac spine and spread other fingers posteriorly
 - Injection is given in the V formed between the index finger and the second finger

---A diagram of approved injection sites can be found on the following page---

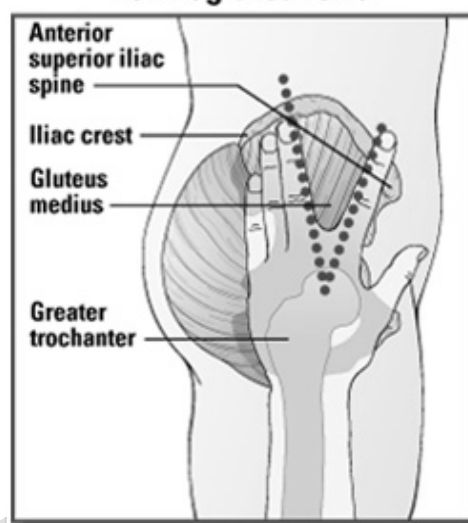
5. Using a circular motion from selected site outward, cleanse site with alcohol wipe
6. With one hand, stretch or flatten the skin overlying the selected site. This will allow for smoother entry of the needle.
7. In the other hand, hold syringe like a dart and quickly thrust the needle into the tissue and muscle at a 90-degree angle.
8. Aspirate syringe to ensure that inadvertent venous administration is avoided
 - If blood is aspirated into the syringe, withdraw the syringe and needle and dispose of properly
 - Do not administer any medication mixed with blood
 - Begin again at a different site
9. If no blood is aspirated, slowly inject medication
10. After all medication is injected
 - Quickly withdraw syringe and dispose of in an approved container
 - Gently massage over the injection site to increase absorption and medication distribution
 - Apply firm pressure and place band-aid over site

Injection Sites

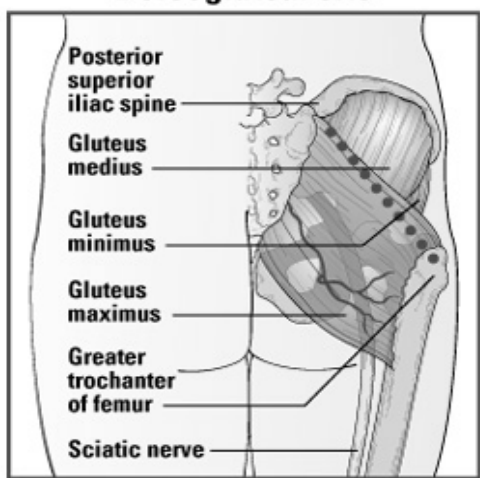
Deltoid site



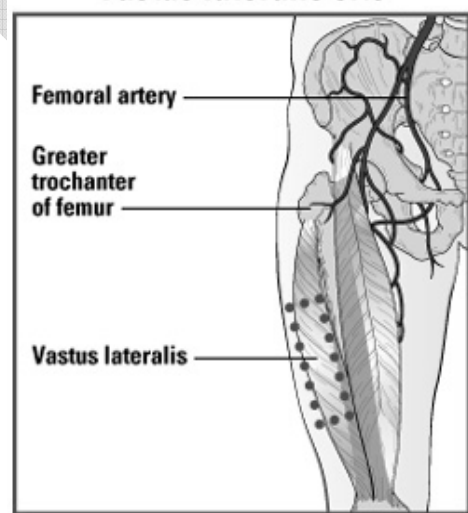
Ventrogluteal site



Dorsogluteal site



Vastus lateralis site



Intraosseous Infusion Manual

Paramedic	◆
EMT Intermediate	◆
EMT Basic	

Intraosseous infusion is a temporary means of intravenous access in children. Complications are infrequent (0.6%) and consist mostly of infection in adjacent tissue.

INDICATIONS

- Rapid vascular access required in patients < 37 kg and rapid venous cannulation has failed.
- Venous cannulation would be too time-consuming
 - IO access prior to peripheral IV attempts may be considered in
 - Cardiac arrest
 - Profound hypovolemia with altered mental status

CONTRAINDICATIONS

- In the following situations, IO access using the opposite extremity should be considered
 - Fracture of the tibia or femur
 - IO within past 24 hours
 - Cutaneous infection or burn overlying insertion site
 - Inability to locate anatomical landmarks due to significant edema at site
- Excessive tissue at insertion site
- Osteomyelitis
- Osteogenesis imperfecta
- Patient weight greater than 36 kg.

NOTES/PRECAUTIONS

- Ideal insertion site on the tibia lies 1 to 3 cm distal to the tibial tuberosity on the anterior medial surface
- Should be replaced with conventional venous access as soon as possible
- All IV medications, blood, or blood by-products may be delivered through IO infusion

PROCEDURE

1. Patient should be supine with leg rotated slightly externally
2. Body Substance Isolation (BSI)
3. Sterilize or disinfect the skin over insertion site
4. Using the needle, penetrate the skin perpendicularly
5. Advance the needle perpendicular (90 degrees) to the long axis of the bone
 - Away from the growth plate

6. Using firm pressure and a rotating or twisting motion, penetrate the cortex
 - Upon entry into the marrow space, a sudden “give” will be felt
 - Deep penetration of the needle through the bone cortex on the opposite side can occur, with delivery of infusion or medications into the surrounding tissue spaces
7. Remove trocar from needle and attach syringe
 - Aspiration of blood and marrow contents confirms needle tip placement in the marrow
 - It is possible that particulate matter or blood will not be aspirated, dependent on patient condition or volume status.
8. Prior to IO bolus or flush, a patient with GCS >8, should be administered 2% Lidocaine SLOWLY through the attached pre-primed extension set-
 - For patients 3 kg-36 kg- 0.5 mg/kg (Lidocaine should be reserved for patients with evidence of pain directly related to the IO infusion).
9. Connect intravenous fluid set and observe for free flow of fluid
 - Inability to infuse implies misplacement of the needle tip
 - Properly dress and secure needle.

Adult Intraosseous Sternal Infusion (Only with approved Variance)

Paramedic	◆
EMT Intermediate	◆
EMT Basic	

INDICATIONS:

1. Patients in critical need of vascular access for volume replacement or medication administration and who have either poor vein selection or in whom one or two intravenous attempts have failed, and
2. Patients 18 years of age and older, and
3. Decreased level of consciousness (GCS < 6 with no purposeful movement) due to medical or traumatic insult or injury.
4. Cardiac arrest patients that one or two intravenous attempts have failed.

CONTRAINDICATIONS:

1. Weight less than 110 lbs. (50 kg); age less than 18 years; pathological small size.
2. Previous midline sternotomy.
3. Suspected fractured sternum or significant tissue damage at insertion site.
4. Obvious congenital sternal malformations.
5. Very small sternum.
6. Severe osteoporosis or bone softening condition.

PRECAUTIONS:

1. Only one attempt should be made using this device.

PROCEDURE:

1. Assemble and prepare all equipment, including bag of normal saline with tubing purged.
2. Prep site with betadine followed by alcohol prep.
3. Locate the sternal notch with finger and apply patch.
4. Verify that target zone is on midline over manubrium.
5. Remove sharp protector and position introducer in the target zone perpendicular to the skin.
6. Push introducer with gradually increasing force until introducer release is heard and felt.
7. Remove the introducer and replace the sharp protector.
8. Connect the infusion tube to the male connector on the patch.
9. Aspirate with a syringe for free flow of marrow.
10. Attach the female connector to purged fluid tubing and begin to run fluids.
11. Check for infiltration.
12. Apply the protector dome to the site.
13. Ensure that the remover package remains with the patient (unopened) and is forwarded to emergency department personnel along with removal instructions.
14. Contact the on line medical director for procedure follow-up.

SPECIAL NOTES:

1. **May only be performed by ALS personnel.**
2. If drip rate is slow, flush with 10 cc normal saline. If slow drip continues, consider inflating BP cuff on bag at 300 mmHg.
3. For bleeding around the site, apply pressure around the catheter.
4. All medications that are given via the IV route may be given IO.
5. Device may be left in place for up to 24 hours.

DOCUMENT

1. Circumstances contributing to the decision for Sternal IO procedure.
2. Procedure, vital signs, ECG rhythm identification and patient response.
3. Condition of the site, patency of the infusion, assessment for infiltration, any complications.
4. If an attempt was made without success.
5. Patency of the line, condition of the site on arrival to the hospital.

Intravenous Fluid Therapy

Paramedic	◆
EMT Intermediate	◆
EMT Basic	

Intravenous therapy is the introduction of fluids and other substances into the venous side of the circulatory system. It is used to replace blood loss through hemorrhage, for electrolyte or fluid replacement, and for introduction of medications into the vascular system.

INDICATIONS

- Patients requiring intravenous fluids or medications
- Patients in which a high potential for hemodynamic compromise or vascular system instability exists

CONTRAINDICATIONS

- None

NOTES/PRECAUTIONS

- Caution must be exercised in patients with coagulopathies (e.g., patients on coumadin, warfarin, or hemophilia) since free bleeding may occur.
- Proper size angiocath
 - In adults, intravenous access should be accomplished with a 20 gauge or smaller catheter unless fluids or medications are to be given, or a high potential for hemodynamic compromise exists
 - Eighteen (18) gauge or larger catheters should not be routinely used in the uncomplicated patient
 - For acute stroke (Stroke Alert) patients, IV therapy should include no smaller than an 18 gauge catheter in the AC
- Suitable venipuncture sites
 - Back of the hand
 - Forearm
 - Antecubital fossa
 - Leg

PROCEDURE

1. Body Substance Isolation (BSI)
2. Locate suitable venipuncture site
3. Place constricting (enough to halt venous return, not arterial flow) band above the chosen site
4. Select a suitable vein. If possible, it should be well fixed, firm, and free of proximal valves.
5. Using alcohol or iodine swabs, and a circular motion inside to outside, thoroughly cleanse the IV site
6. Choose proper size angiocath
7. With the bevel of the needle facing up, enter the site at a 30-45 degree angle until a “pop” is felt
8. After the “pop” and blood return is seen in the flash chamber, advance approximately 1 cm more
9. Carefully slide the catheter off the needle into the vein until the hub stops at the skin
10. Remove the needle and place into an approved receptacle for disposal
11. Attach the distal end of the administration set to the IV hub
12. Confirm flow of IV fluid. If infiltration occurs stop the flow and replace.
13. Securely tape the catheter into place using either veni-guards, tegaderm, or tape.
14. Adjust the flow rate as needed according to patient presentation and COG guideline

SALINE LOCK

1. Prepare equipment
 - Flush air from “saline lock” by injecting 1 to 3 mL of fluid, using a 3 mL syringe (w/o needle), into the port then recapping the Luer lock device
2. Follow steps 1 through 10 as above for venipuncture.
3. Remove protective cap on the Luer lock device and carefully twist it onto the IV hub. Confirm that firm contact has been established and no fluid leaks exist.
4. Flush saline lock with 3 mL of normal saline.
5. Tape or secure as previously noted.

Official

Manual Defibrillation

LIFEPAK 11 or 12

Paramedic	◆
EMT Intermediate	
EMT Basic	

The most important intervention in ventricular fibrillation or pulseless VT is rapid defibrillation. The procedure involves the placement of two electrodes, either hand-held paddles or hands-off electrodes, on the patient's chest so that the heart is in the pathway of the current as it travels between them. Relative to defibrillation efficacy, reversal of the paddle or electrode positions is unimportant since energy is delivered regardless.

INDICATIONS

- Ventricular fibrillation
- Pulseless ventricular tachycardia
- Unstable Torsade de pointes
 - Unsynchronized defibrillation is preferred

CONTRAINDICATIONS

- None in the presence of life-threatening VF or pulseless VT, unless defibrillation energy could be transferred to bystander or Provider(s) due to direct patient contact or hazardous environment

NOTES/PRECAUTIONS

- An unconscious patient that receives shocks from his/her implantable cardioverter defibrillator (ICD), but remains in pulseless VT or VF, should receive an electrical counter shock
- External defibrillation will not damage ICD circuitry if recommended energy levels are used and paddle or electrode placement directly over the ICD, most often located in the lower left abdominal cavity, is avoided.

PROCEDURE

1. Observe monitor to confirm rhythm coincides with pulseless patient in VF or VT
2. Apply conductive gel or paste to paddle electrodes, or place hands-free electrodes on the patient's chest
 - One electrode over upper right anterior chest and other electrode on left lower chest wall
 - Patient with permanent pacemaker
 - Place defibrillator paddles or electrodes as far away from pulse generator as possible
 - Patient with implantable cardioverter defibrillators (ICD)
 - Avoid placement of electrodes or paddles over the ICD
3. Select energy level to be delivered per Patient Care Guidelines
 - There is no energy level adjustment required for patients with pacemaker or ICD
4. Charge defibrillator to the desired energy level
5. If using paddles, place them firmly on patient's unclothed chest using approximately 25 lb. of pressure on each paddle.
6. Make certain all providers are clear of patient
7. Deliver shock
 - Using paddles, discharge defibrillator by pushing both paddle discharge buttons simultaneously
 - Using hands-free system with Quik-Combo adapter, simultaneously depress both discharge buttons located
 - on the front of the Quik-Combo module (LP11)
 - on the right front panel (LP12)
 - Assess patient and observe monitor display for results

Nebulized Medication

Paramedic	◆
EMT Intermediate	◆
EMT Basic	

Inhaled medications provide an excellent therapy for acute bronchospasm in the prehospital setting. These agents are generally effective, safe, and easy to use. Application of bronchodilating drugs directly into the lungs allows a much lower dosage, thus minimizing effects.

INDICATIONS

- Signs/symptoms of bronchospasm/wheezing related to
 - Allergic reaction/anaphylaxis
 - Obstructive airway disease
 - COPD
 - Chronic bronchitis
 - Croup
 - Asthma
 - Near drowning
 - Hydrofluoric acid exposure (ALS)

CONTRAINDICATIONS

- Hypersensitivity to medication
- Use with caution in the presence of severe hypertension or uncontrolled tachyarrhythmias
- Sensitivity to peanuts or soy products
 - Ipratropium bromide

NOTES/PRECAUTIONS

- Medications approved for nebulization
 - EMT-I / EMT-P
 - Albuterol

PROCEDURE

1. Ensure all required pieces are available
 - T-piece
 - 6" tubes X 2
 - Mouthpiece and/or face mask
 - Medication chamber
 - Oxygen tubing
2. Assemble nebulizer
 - Attach larger female port of T-piece firmly to male adapter on medication chamber
 - If face mask is being used, the female fitting on the bottom of the mask is connected directly to the male adapter on the medication chamber
 - Attach 6" tubes to each of the male ports on the T-piece
 - Firmly attach threaded portion of mouthpiece to either 6" tube
 - If patient is intubated, attach 90-degree endotracheal tube adapter to endotracheal tube and other end to the 6" tube
 - Attach oxygen supply tubing to oxygen port located on bottom of medication chamber

3. Unscrew top of medication chamber, add total amount of medication to be nebulized, and replace top.
4. Set oxygen flow at 4-6 Lpm
 - Ensure that medication is flowing prior to giving mouthpiece to patient or placing facemask on patient
5. Place mouthpiece in patient's mouth or position facemask on patient, instructing him/her to inhale as deeply as possible and hold as long as possible prior to exhaling
 - If patient is intubated
 - Attach non-rebreathing patient valve of bag-valve-mask to free 6" tube
 - Ensure suctioning port on 90-degree adapter is closed
 - Begin ventilating patient

Official

Subcutaneous Injections

Patient Care Setting

Paramedic	◆
EMT Intermediate	◆
EMT Basic	

Subcutaneous (SQ) injection is one of the simpler forms of drug administration and may indeed be lifesaving in cases of severe asthma or allergic reaction. It is a method by which drugs are delivered directly into the subcutaneous or fatty tissue from where they are absorbed into the systemic circulation. The only medication approved for off-line SQ injection is epinephrine.

INDICATIONS

- When rate of absorption needs to be slower and/or prolonged in action
- When other administration routes are unsuccessful or unavailable

CONTRAINDICATIONS

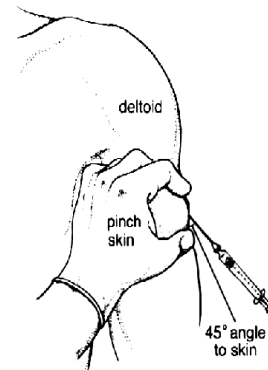
- Severe bleeding disorders or recent thrombolytic therapy
- When rapid absorption and action of a medication is required

NOTES/PRECAUTIONS

- Appropriate equipment
 - Needle should be 5/8 inch, 25 gauge, or manufactured tuberculin 1 mL syringe with attached needle
 - Alcohol wipe and Band-aids
- Appropriate injection sites
 - Dorsolateral aspect of the upper arm is preferred
 - Abdomen
 - Anterior thigh

PROCEDURE

1. Body Substance Isolation (BSI)
2. Prepare equipment
3. Five "R's"
 - Right patient / Right drug / Right dose / Right route / Right time
4. Locate injection site
5. Using a circular motion from selected puncture site outward, cleanse site with alcohol wipe
6. Using non-dominant hand, bunch up patient's tissue between thumb and index finger and hold
7. Quickly insert needle into the injection site at a 45-degree angle
 - Having bevel of needle facing upward eases insertion, making it less painful
8. Aspirate syringe to ensure that inadvertent venous administration is avoided
 - If blood is aspirated into the syringe, withdraw the syringe and needle and dispose of properly
 - Do not administer any medication mixed with blood
 - Begin again at a different site
9. If no blood is aspirated, slowly inject medication
10. After all medication is injected
 - Quickly withdraw syringe and dispose of in an approved container
 - Gently massage over the injection site to increase absorption and medication distribution
 - Apply firm pressure and place a band-aid over the injection site



Section A-D

Clinical Procedures

and Equipment

Reference

Glucose Assessment

Paramedic	◆
EMT Intermediate	◆
EMT Basic	◆
	◆

Most Glucometers for blood glucose testing process are based on electrode sensor technology. Capillary action at the end of the test strip draws a small amount of blood into the reaction chamber and a reading is displayed within 30 seconds. No timing, wiping, or blotting is required. If done properly, the glucose level can be determined to within 10% of clinical laboratory values.

INDICATIONS

- Any patient with an altered mental status
- Patients with metabolic or endocrine disorders, and presenting with non-specific complaints
- Bradycardia or hypothermia in infants

CONTRAINDICATIONS

- None

NOTES/PRECAUTIONS

- Caution must be used when performing glucose assessment on any patient with a bleeding disorder (e.g., hemophilia)
- In neonates and infants, a heel stick is the preferred location to obtain a blood sample
- If Lo appears in the display, the blood glucose value may be below 20 mg/dL
- If Hi appears in the display, the value may be above 600 mg/dL
- Readings should be confirmed on any patient in which the clinical presentation does not support blood glucose findings
- A major cause of erroneous readings is failure to let the alcohol used to clean the test site dry completely prior to testing

PROCEDURE

1. Open test strip, and insert into meter
 - Follow instructions for your own machine.
2. Cleanse the test site, usually a fingertip, with alcohol. Allow the alcohol to dry completely before puncturing the skin.
3. Obtain a blood sample using an approved lancing device
 - It is preferred to use a gauze pad (not alcohol) to clean off the first blood that appears and use a second drop for sampling
4. Touch the test strip to the drop of blood. Blood should be drawn into the test strip and a “beep” heard.

Kendrick Traction Device (KTD)

Paramedic	◆
EMT Intermediate	◆
EMT Basic	◆
	◆

The Kendrick Traction Device (KTD) has improved the ability to provide femoral traction. The traction pole length quickly adjusts for both adult and pediatric application. The need for patient rollover or unnecessary leg elevation has been eliminated. There is no ischial bar, so all problems of excessive pressure have been eliminated. Application variations allow you to work around trauma to the hip or groin. As little as a two inch protrusion beyond the foot reduces the problems of working in confined spaces, with a litter, a stretcher, or a helicopter.

INDICATIONS

- Open or closed mid-shaft femur fracture

CONTRAINDICATIONS

- Injuries immediately proximal to, or involving the knee joint
- Injury to the pelvis
- Partial amputation
- Lower leg or ankle injuries
- If use would delay transport of a patient with a life-threatening condition

NOTES/PRECAUTIONS

- Isolated proximal femur fractures in the elderly are usually best managed with anatomical splinting utilizing a scoop stretcher. Traction splints are not appropriate for proximal femur fractures.

PROCEDURE

1. Patient should be supine
2. Check distal circulation, sensation, and motion
3. Apply the ankle hitch tightly, slightly above the ankle bone
4. Tighten stirrup by pulling the **GREEN** tabbed strap until the hitch fits snugly under the heel
5. Apply upper thigh system by sliding male buckle under the leg at the patella, and using a “see-saw” motion, slide the strap upward until positioned in the groin
6. Engage the buckle and cinch the strap until the traction pole receptacle is positioned at the belt-line or pelvic crest. Assure that male genitalia is clear of strap
7. Snap out traction pole making sure that each joint of the pole is securely seated
8. Place traction pole alongside the leg so that one section (8”) extends beyond the bottom of the foot
9. Adjust pole length as required (i.e., pediatric vs. adult). Insert pole end, or ends, into the traction pole receptacle
10. Secure elastic strap around knee
11. Place **YELLOW** tab over pointed (dart) end of traction pole and apply traction by pulling **RED** tab
12. Apply approximately 10% of your body weight to a maximum of 15 pounds tension
13. Patient comfort will be the primary objective. Traction should be applied smoothly by grasping the strap on each side of the buckle and simultaneously feeding and pulling with equal pressure.
14. Finish packaging by applying upper (thigh) and lower (ankle) elastic straps
15. Reassess distal circulation, sensation, and motion
16. Secure to long spine board, scoop, etc.

Spinal Restriction Algorithm

Paramedic	◆
EMT Intermediate	◆
EMT Basic	◆
	◆

To board, or not to board, a patient involved in a traumatic event has been a challenging question facing the EMS industry. Now there is medical literature supporting the use of clinical criteria to assess specific indicators found to be reliable in determining which patients would best benefit from spinal movement restriction and which could be safely transported in a position of comfort. It is the responsibility of all Providers to see that, with the exception of isolated extremity injury, the Spinal Restriction Algorithm is a component of the assessment completed on any patient involved in a traumatic event.

INDICATIONS

- Patient involved in a traumatic event

CONTRAINDICATIONS

- Patient suffering from isolated extremity injury

Utah County EMS System
Spinal Restriction Decision Algorithm

With the exception of isolated extremity injury, any patient involved in a traumatic event will be assessed for spinal trauma

Abnormal Sensory/Motor

- Is there weakness, sensory abnormality, or motor function reduction (new or old)?
- Is there a report of temporary symptoms following the incident that have since resolved?

If YES, restrict spinal movement

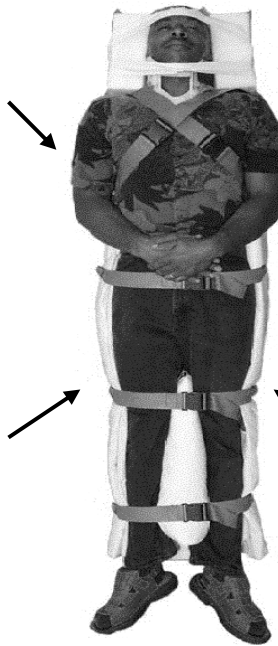
Distracting Injury?

- Is there a clinically apparent painful injury that could distract the patient from the pain of a spinal injury?

If YES, restrict spinal movement

If the answer is **NO** to **ALL** of the above

YES?



YES?

YES?

YES?

Unreliable Patient Exam?

- The patient must be calm, cooperative, sober, and alert to be reliable
 - Are you questioning the reliability of the patient exam?
- If YES, restrict spinal movement*

Spinal Pain / Tenderness?

- Is there direct or referred pain caused by palpation of the spine or the musculature supporting the spine?

If YES, restrict spinal movement

It is the expectation of the Utah County EMS System to offer transport to all patients for further evaluation.

Section B

Patient Assessment

Tools

APGAR

Paramedic	◆
EMT Intermediate	◆
EMT Basic	◆

The Agar score is tool used to evaluate and document a newborn's physical condition. It is generally performed at 1 minute, and again at 5 minutes after birth.

INDICATIONS

- Assessment of a newborn

CONTRAINDICATIONS

- None

NOTES/PRECAUTIONS

- Most newborns have an APGAR score of 8-10 at 1 minute after birth
- APGAR scores
 - 10 Infant is in best possible condition
 - 7-9 Infant is slightly depressed but near normal
 - 4-6 Infant is moderately depressed
 - 0-3 Infant is severely depressed
- Thorough assessment, not APGAR scoring, should determine if, and what type of resuscitation efforts may be required for a newborn

APGAR

0=Absent	1=Weak	2=Strong
<i>1 Minute</i>		<i>5 Minutes</i>
_____	A Appearance	_____
_____	P Pulse Rate	_____
_____	G Grimace	_____
_____	A Activity	_____
_____	R Respiratory	_____
Total _____		Total _____

	Sign	0 Points	1 Point	2 Points
A	Appearance (Skin Color)	Blue-gray, pale all over	Pink except for extremities	Pink over entire body
P	Pulse	Absent	<100/min	>100/min
G	Grimace (Reflex Irritability)	No response to stimuli	Grimaces in response to stimuli	Sneezes, coughs, pulls away
A	Activity (Muscle Tone)	Absent, flaccid	Arms and legs flexed	Active movement
R	Respiration	Absent	Slow, irregular	Good, crying

APGAR scores should be assessed at 1 minute and again at 5 minutes after birth

Assessment Guidelines

Paramedic	◆
EMT Intermediate	◆
EMT Basic	◆
	◆

To ensure consistency in the assessment and treatment of patients, the following should apply

PATIENT AGE

- Remember that in determining which age group a particular patient may fit into, several factors must be considered. They include
 - Legal issues
 - Transport Guidelines
 - National standard course guidelines and/or criteria
 - Patient care procedures including medication delivery
 - It is the Provider's responsibility to take all of these factors into consideration when determining what is best for the patient
- General guidelines
 - Neonate (newborn) - birth to 1 month
 - Infant - 1 month to 1 year
 - Child - 1 year through 8 years old
 - Adolescent - 9 years old through 16 years old
 - Patient Transport Destination guidelines dictate that critical patients <16 years of age be transported to a Children's Hospital if possible.
 - Adult - age 18 or older
 - Unless specific circumstances exist as spelled out in Professional Practice section

ADULT PATIENT

- Tachycardia
 - Resting heart rate greater than 100 bpm
- Bradycardia
 - Resting heart rate less than 60 bpm
- Hypertension
 - Consistent resting blood pressure greater than or equal to 140/90 mmHg
- Hypotension
 - Consistent resting blood pressure less than 100/60 mmHg with associated signs and symptoms of hypoperfusion
 - As described in Core Principles, the goal in treating patients suffering from non-compressible bleeding is to maintain a systolic BP of 70 mmHg. This is referred to as permissive hypotension.

PEDIATRIC PATIENT

- Resuscitation
 - Children may present in cardiopulmonary failure from a wide variety of causes, mainly respiratory disorders
 - Regardless of the primary origin a systematic approach will allow rapid determination of the patient's physiologic status followed by initiation of resuscitative efforts

- The goal of rapid assessment and intervention is not necessarily to make a specific etiologic diagnosis but rather to determine the degree of physiologic derangement and then to intervene promptly to ensure adequate oxygenation, ventilation, and circulation
- Heart rate
 - A child's heart rate should be evaluated based on age and condition
 - The heart rate of an anxious, sick, or injured child should be rapid
 - In children <8 years of age, a heart rate less than 60 bpm, coupled with signs of poor perfusion, is an ominous sign.
 - Tachycardia is a nonspecific sign of distress, whereas bradycardia for age is indicative of rapidly impending arrest and necessitates aggressive resuscitation.
- Shock
 - Determination that a patient is in shock should be made by clinical examination before a blood pressure is measured
 - Shock is present if two of the following signs are abnormal
 - Tachycardia
 - Delayed capillary filling time
 - Poor pulses and cool extremities
- Blood pressure
 - Determination of blood pressure is not necessary to determine that a patient is in shock
 - Shock or hypoperfusion of vital organs may be present before the blood pressure falls below normal limits for age
 - Shock that occurs with signs of decreased perfusion (e.g. tachycardia and delayed capillary refill time) but with a normal BP is compensated shock
 - When the BP falls, decompensated shock is present
 - The median (normal) SBP for a child over 1 year of age
 - $90 \text{ mm Hg} + (2 \times \text{age in years})$
 - The lower limit (hypotensive) of SBP
 - $70 \text{ mm Hg} + (2 \times \text{age in years})$
 - With associated signs or symptoms, the lower limit of SBP should be used to determine if hypotension is present in the child
- Medication dosing is usually weight based, not age based in infants and children

PEA Reversible Causes

H's and T's

Paramedic	◆
EMT Intermediate	◆
EMT Basic	◆
	◆

The included charts from the ACLS-EP Course are provided to serve as a memory aid for the “D” (Differential Diagnosis) portion of the Secondary Survey for those patients having suffered cardiac arrest.

The H's		
Causes	Assessments	Treatments
Hypovolemia <ul style="list-style-type: none"> Occult bleeding Anaphylaxis Pregnancy w/ gravid uterus 	<ul style="list-style-type: none"> History / exam Hematocrit β-HCG test 	<ul style="list-style-type: none"> Volume Blood
Hypoxia <ul style="list-style-type: none"> Inadequate oxygenation 	<ul style="list-style-type: none"> Breath Sounds Tube placement Arterial blood gas 	<ul style="list-style-type: none"> Oxygen Ventilation Forceful CPR ET tube stable
Hypothermia/Hyperthermia <ul style="list-style-type: none"> Profound hypothermia Heat Stroke 	<ul style="list-style-type: none"> Touch Core body temperature 	<ul style="list-style-type: none"> Active/passive external rewarming Active/passive internal rewarming
High and Low Electrolyte Levels <ul style="list-style-type: none"> Potassium, sodium, magnesium, calcium 	<ul style="list-style-type: none"> History / exam Risk factors 	<ul style="list-style-type: none"> Calcium Bicarbonates, insulin, glucose
Hypoglycemia/Hyperglycemia <ul style="list-style-type: none"> Low glucose=Insulin reactions Diabetic ketoacidosis Nonketotic, hyperosmolar coma 	<ul style="list-style-type: none"> History / exam Lab tests 	<ul style="list-style-type: none"> Fluids Potassium Insulin 50% glucose
Hydrogen ion <ul style="list-style-type: none"> Acidosis Diabetic ketoacidosis Drug overdose Renal failure 	<ul style="list-style-type: none"> Clinical setting Arterial blood gas Lab tests 	<ul style="list-style-type: none"> Forceful CPR Optimal perfusion Hyperventilation Bicarbonate

The T's

Causes	Assessments	Treatments
Trauma <ul style="list-style-type: none"> ▪ Massive trauma ▪ Electrocution ▪ Lightning ▪ Near-drowning 	<ul style="list-style-type: none"> ▪ History ▪ Clinical setting ▪ Physical exam 	<ul style="list-style-type: none"> ▪ Rescuer safety ▪ Reverse triage ▪ Early ETT placement ▪ Treat asystole longer
Tension Pneumothorax <ul style="list-style-type: none"> ▪ Asthma as possible cause ▪ Trauma ▪ COPD, blebs ▪ Ventilators + positive pressure 	<ul style="list-style-type: none"> ▪ Risk factors ▪ Diminished lung sounds ▪ Tracheal deviation ▪ Distended neck veins 	<ul style="list-style-type: none"> ▪ Needle decompression ▪ Chest tube
Thrombosis, lungs <ul style="list-style-type: none"> ▪ Pulmonary embolus 	<ul style="list-style-type: none"> ▪ Risk factors ▪ History ▪ Echo or V/Q 	<ul style="list-style-type: none"> ▪ Volume ▪ Dopamine ▪ Heparin ▪ Thrombolytics?
Thrombosis, heart <ul style="list-style-type: none"> ▪ AMI ▪ Other acute coronary syndrome 	<ul style="list-style-type: none"> ▪ Prearrest symptoms ▪ ECG ▪ Serum markers 	<ul style="list-style-type: none"> ▪ MONA, pressors ▪ Emergent PTCA ▪ Empiric t-pa ▪ Balloon pump ▪ CABG
Tamponade, cardiac <ul style="list-style-type: none"> ▪ Trauma ▪ Renal failure ▪ Chest compressions ▪ Carcinoma ▪ Central line perforations 	<ul style="list-style-type: none"> ▪ Risk factors ▪ History ▪ Prearrest picture ▪ Distended neck veins ▪ Echo 	<ul style="list-style-type: none"> ▪ Volume ▪ Pericardiocentesis ▪ Thoracotomy
Tablets (drug and toxin overdose) <ul style="list-style-type: none"> ▪ TCAs, phenothiazines ▪ β-Blockers, calcium channel blockers ▪ Cocaine, digoxin, aspirin, acetaminophen 	<ul style="list-style-type: none"> ▪ Risk factors ▪ History and toxidrome 	<ul style="list-style-type: none"> ▪ Specific antidotes ▪ Bicarbonate ▪ Glucagon, calcium ▪ Long CPR ▪ Cardiopulmonary bypass

COPD indicates chronic obstructive pulmonary disease; V/Q, ventilation-perfusion; AMI, acute myocardial infarction; MONA, morphine, oxygen, nitroglycerin, aspirin; PTCA, percutaneous transluminal coronary angioplasty; CABG, coronary artery bypass graft; and TCAs, tricyclic antidepressants

Glasgow Coma Scale (GCS)

Paramedic	◆
EMT Intermediate	◆
EMT Basic	◆
	◆

The Glasgow Coma Scale (GCS) is considered one of the best indicators of eventual clinical outcome in the head injured patient. It is the responsibility of all Providers to see that a GCS score is a part of the neurological exam completed on any patient suspected of having suffered a head injury.

INDICATIONS

- Patient suspected of having suffered a head injury

CONTRAINDICATIONS

- None

Glasgow Coma Scale

Eye Opening	Spontaneous	4	GCS 13 – 15	Minor head injury. Usually no long term disabilities, no hospital stay observe in the ED for 6-12 hours. Approximately 80-90% have full recovery within weeks.
	Voice	3		
	Pain	2		
	None	1		
Verbal	Oriented	5	GCS 9 – 12	Moderate head injury. Usually requires hospital stay, potential for long term deficits. Mortality is less than 20%.
	Confused	4		
	Inappropriate	3		
	Incomprehensible	2		
	None	1		
Motor	Obeys commands	6	GCS < 8	Severe head injury. Most patients are comatose, long hospital stays with long term deficits. This is an indication life threatening intracranial dysfunction. Approximately 40% mortality within 48 hours of injury
	Localizes pain	5		
	Withdraws	4		
	Flexion	3		
	Extension	2		
	None	1		

Eye Opening Response

- Patient **spontaneously** opens his/her eyes and is blinking 4
- Patient will only open his/her eyes in response to **verbal** stimuli 3
- Patient will not open his/her eyes without application of **painful** stimuli 2
- There is **no response**. Patient will not open his/her eyes. 1

Verbal Response

- Patient is **oriented** 5
- Patient is able to answer questions but conversation is **confused** 4
- Patient uses **inappropriate** words 3
- Patient's speech is **incomprehensible**. Just sounds. 2
- There is **no response**. No attempt at verbal communication. 1

Motor Response

- Patient **obeys** commands for movement 6
- Patient exhibits **purposeful** movement when painful stimulus is applied 5
- When painful stimulus is applied, patient **withdraws** in response 4
- Patient's response to painful stimuli, is **flexion** of upper extremities 3
- Patient's response to painful stimuli, is **extension** of upper extremities 2
- There is **no response**. Patient does not move when painful stimuli is applied. 1

Los Angeles Prehospital Stroke Scale (LAPSS)

Paramedic	◆
EMT Intermediate	◆
EMT Basic	◆
	◆

The Los Angeles Prehospital Stroke Scale (LAPSS) is a tool used to evaluate and document the presentation of a patient suspected of having suffered a stroke. It is the responsibility of all Providers to see that is a part of the neurological exam completed on any patient exhibiting the signs and symptoms associated with stroke.

INDICATIONS

- Assessment of patient exhibiting signs and symptoms associated with stroke

CONTRAINDICATIONS

- None

NOTES/PRECAUTIONS

- If "Yes" or unknown to all items listed, LAPSS screening criteria has been met
 - If LAPSS criteria for stroke is met, call receiving hospital with "Stroke Alert"
 - If criteria are not met, then return to the appropriate treatment protocol
 - Patient may still be experiencing a stroke if even if LAPSS criteria are not met

Los Angeles Prehospital Stroke Screen (LAPSS)

Screening Criteria

		Yes	No
1	Age over 45 years	<input type="checkbox"/>	<input type="checkbox"/>
2	No prior history of seizure disorder	<input type="checkbox"/>	<input type="checkbox"/>
3	New onset of neurological symptoms within last 24 hours	<input type="checkbox"/>	<input type="checkbox"/>
4	Patient was ambulatory at baseline (prior to event)	<input type="checkbox"/>	<input type="checkbox"/>
5	Blood glucose between 60 and 400	<input type="checkbox"/>	<input type="checkbox"/>

Physical Exam: Look for obvious asymmetry

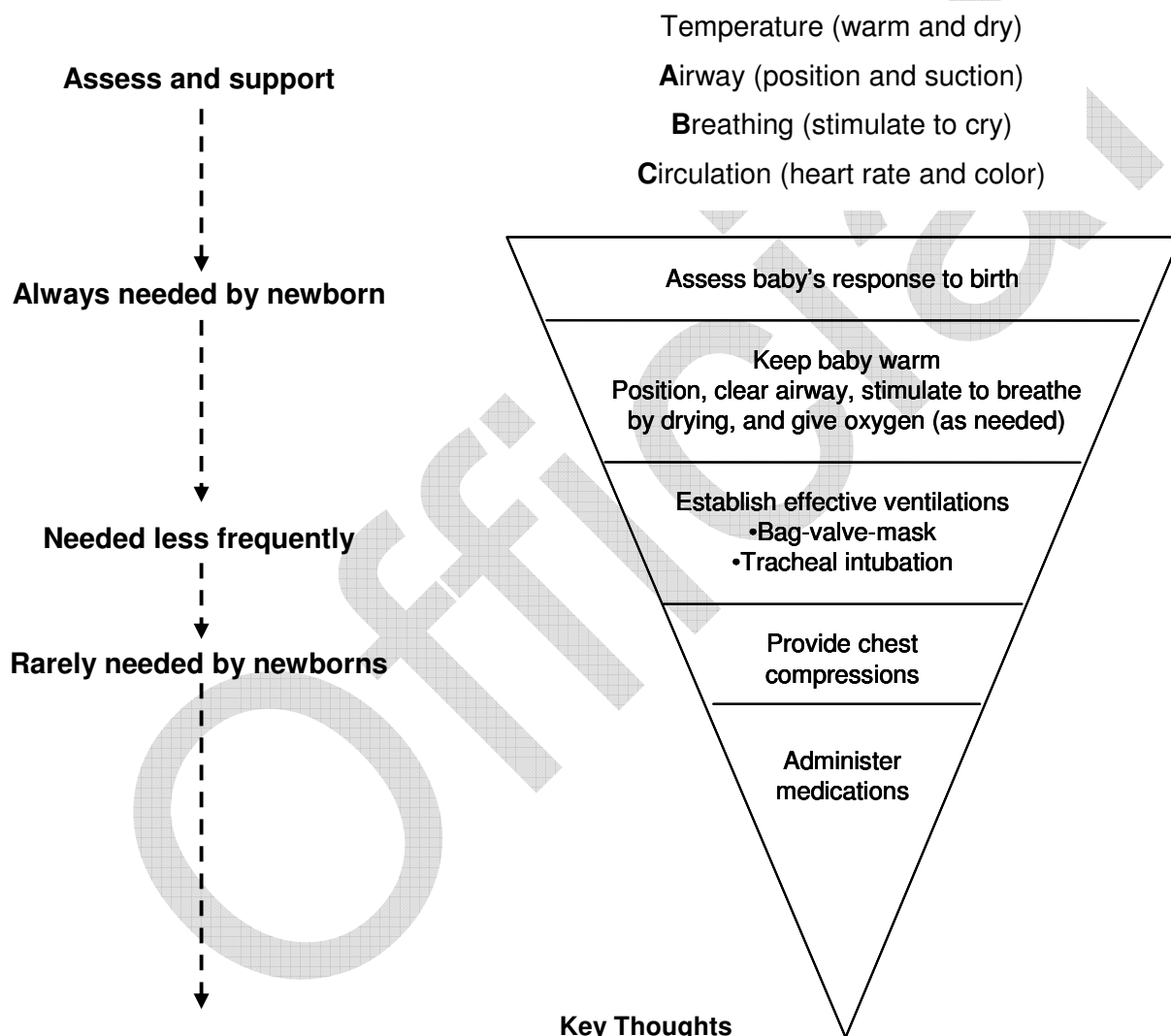
	Normal	Right	Left
Facial smile / Grimace	<input type="checkbox"/>	<input type="checkbox"/> Droop	<input type="checkbox"/> Droop
Grip	<input type="checkbox"/>	<input type="checkbox"/> Weak grip <input type="checkbox"/> No grip	<input type="checkbox"/> Weak grip <input type="checkbox"/> No grip
Arm weakness	<input type="checkbox"/>	<input type="checkbox"/> Drifts down <input type="checkbox"/> Falls rapidly	<input type="checkbox"/> Drifts down <input type="checkbox"/> Falls rapidly

		Yes	No
6	Based on Physical Exam, patient has only unilateral weakness	<input type="checkbox"/>	<input type="checkbox"/>

Newborn Resuscitation

Paramedic	◆
EMT Intermediate	◆
EMT Basic	◆
	◆

Relative frequency of interventions for resuscitation of the newly born who does not present with meconium-stained amniotic fluid. A majority of infants respond to simple measures.



- Keep infants warm and dry. Particularly their heads.
- Airway, airway, airway
 - Position infant on their back with neck in neutral position
 - Hyperextension or flexion can result in an obstructed airway
 - Suction the mouth first, then the nose

OPQRST and Wong Baker Pain Assessment

Paramedic	◆
EMT Intermediate	◆
EMT Basic	◆
	◆

Using a definitive scale to assess the level of pain that a patient may be experiencing can give tremendous insight as to whether or not the interventions utilized are having the desired effect. In addition, the use of common questions/techniques to elicit information from patients concerning their pain, allows for a consistent method for the exchange of information among Providers. All Providers should be familiar with the questions and scales and become comfortable with their use in the field.

INDICATIONS

- Patient experiencing painful event/condition

CONTRAINDICATIONS

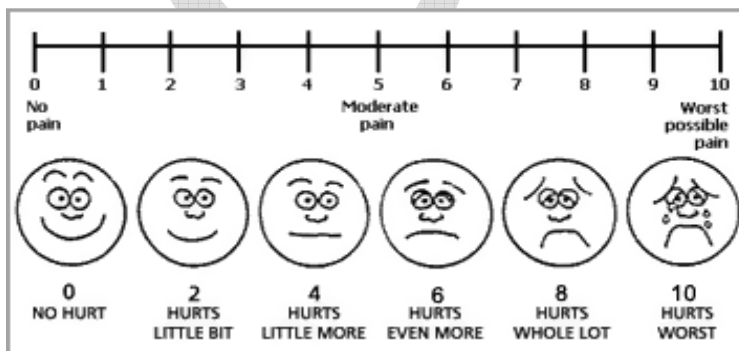
- None

Questioning Patients About Pain

When eliciting information regarding pain, Providers should ask the patient to describe the pain utilizing the **O-P-Q-R-S-T** mnemonic

Onset	When did the pain start? Was it sudden or gradual?
Provocation/Palliation	What makes the pain worse (provocation)? What makes the pain better (palliation)?
Quality	How would you describe the pain? (Dull, sharp, pressure, constant, intermittent)
Radiation	Does the pain stay in one place or does it radiate (move) to another part of the body?
Severity	On a scale of 0–10, with 0 being no pain and 10 being the worst pain you have ever had, what number would you give to this pain?
Time	When did the symptoms begin?

Wong-Baker Faces



Face 0	Very happy. Doesn't hurt at all
Face 1	Hurts just a little bit.
Face 2	Hurts a little more
Face 3	Hurts even more
Face 4	Hurts a whole lot
Face 5	Hurts as much as you can imagine. Don't have to be crying to feel this bad

Rule of Nines

Paramedic	◆
EMT Intermediate	◆
EMT Basic	◆
	◆

The Rule of Nines is commonly used in the prehospital setting to provide a rough estimate of burn injury size. If the burned areas are irregular in shape or widely distributed, an alternate method of estimating the burn area is to visualize the patient's palm as being equal to 1% of body surface area. This is referred to as the "Rule of Palm."

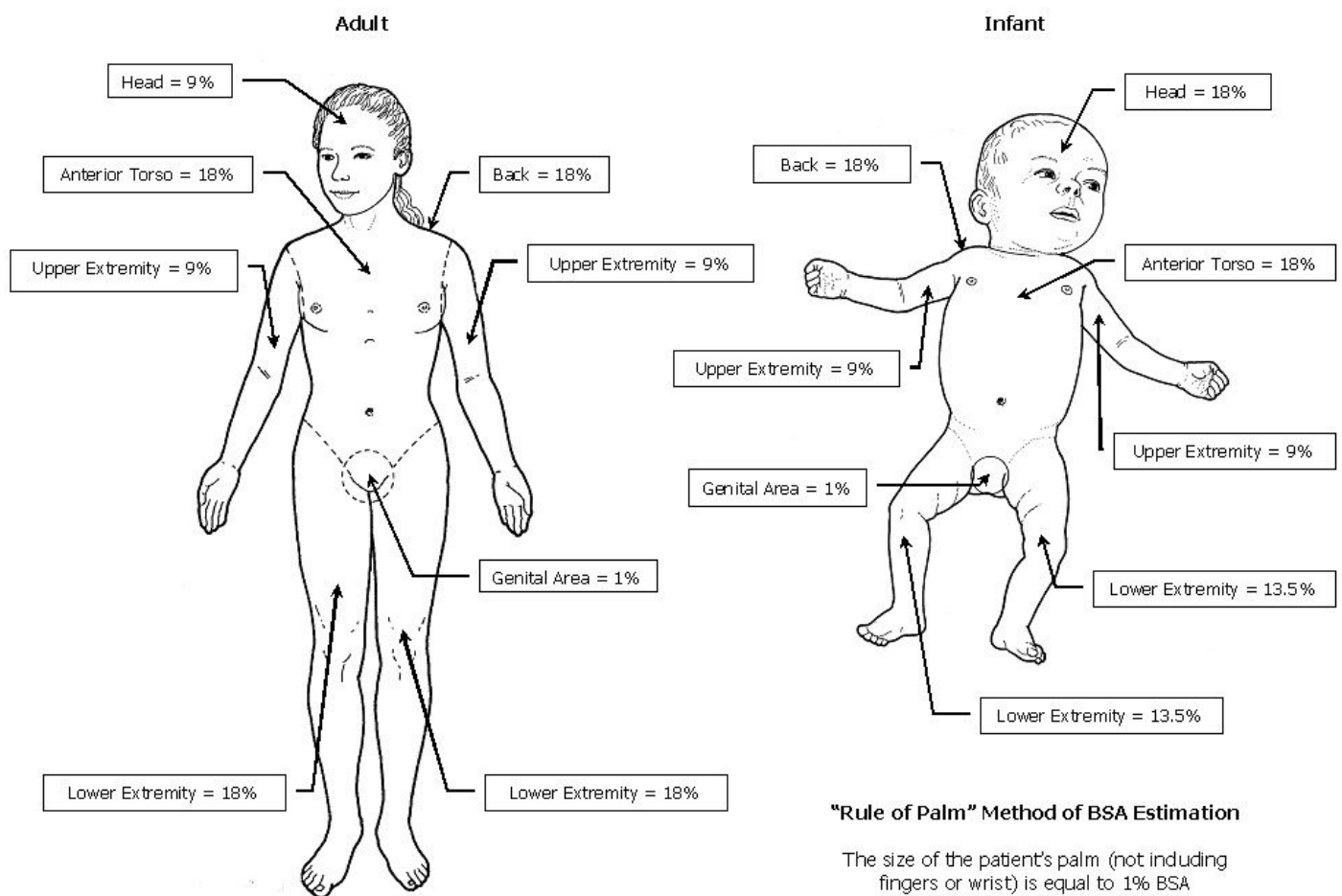
INDICATIONS

- Assessment of patient having suffered burn injuries

CONTRAINDICATIONS

- None

Rule of Nines



Section C

General Reference

Paramedic	◆
EMT Intermediate	◆
EMT Basic	◆

ā	Before
A&Ox3	Alert & oriented to (PPT)
AAA	Abdominal aortic aneurysm
Abd	Abdomen
AB	Abortion
ABC	Airway, breathing, circulation
ABG	Arterial blood gas
a.c.	Before meals
A/C	Aircraft
ACE	Angiotensin-converting enzyme
ACS	Acute Coronary Syndrome
a.d.	Right ear (auris dexter)
ADD	Attention deficit disorder
A.E.	Above elbow (amputation)
AED	Automated external defibrillator
A Fib	Atrial fibrillation
Af	Atrial flutter
AIDS	Acquired immunodeficiency syndrome
AIVR	Accelerated Idioventricular rhythm
A.K.	Above knee (amputation)
ALS	Advanced Life Support
AMI	Acute myocardial infarction
Ant	Anterior
AOS TF	Arrived On Scene To Find
APAP	Acetaminophen
APS	Adult Protective Services
APGAR	A ppearance, P ulse, G rimace, A ctivity, R espiratory effort
ARDS	Adult respiratory distress syndrome
AS	Left ear (auris sinistra)
ASA	Acetyl salicylic acid (aspirin)
ATF	Arrived to find
AV	Atrioventricular
AVA	Alternate vascular access
AVM	Arteriovenous malformation

BBB Bundle branch block

BBS	Bilateral breath sounds
B.E.	Below elbow (amputation)
BGL	Blood glucose level
b.i.d.	Twice a day
B.K.	Below knee (amputation)
BLS	Basic life support
BM	Bowel movement
BP	Blood Pressure
BS	Breath, bowel sounds
BSA	Body surface area
BVM	Bag valve mask

-C-

C	With
C°	Centigrade
C/C	Chief complaint
c/o	Complains / complaining of
CA	Carcinoma, cancer
Ca++	Calcium
CABG	Coronary artery bypass graft
CAD	Coronary artery disease
CAO x 3 or 4 or PPT	Conscious, Alert, & Oriented to Person, Place, Time & Events
CAT/CT	Computerized axial tomography scanner
CBC	Complete blood count
Cc	Cubic centimeter
Cm	Centimeter
CCB	Calcium channel blocker
CCU	Coronary / critical care unit
CHF	Congestive heart failure
CHI	Closed head injury
CID	Cervical Immobilization Device
CK	Creatine kinase
CK-MB	Creatine kinase myocardial band
Cl	Chlorine
CNS	Central nervous system
COPD	Chronic obstructive pulmonary disease
CO	Cardiac output / carbon monoxide
CO₂	Carbon dioxide
+CMS	Positive circulatory, motor & sensory function
CNS	Central nervous system
CP	Chest pain
CPAP	Continuous positive airway pressure
CPR	Cardiopulmonary resuscitation
CPS	Child Protective Services
CRT	Capillary refill time
C-spine	Cervical spine
CSF	Cerebrospinal fluid

CSM	Carotid sinus massage
CTA	Clear to auscultation
CVA	Cerebrovascular accident
CVP	Central venous pressure
Cx	Chest
CXR	Chest x-ray

-D-

DCAPS BTLS

	D eformities, C ontusions, A brasions, P enetrations, P aradoxical movements, B urns, T enderness, L acerations, S welling
DIC	Disseminating intravascular coagulation
Diff	Difficulty
Disch	Discharge
D&C	Dilatation & curettage
dL	Deciliter (1/10 liter: 100 ml)
DAE	Dysbaric air embolism
DKA	Diabetic ketoacidosis
DM	Diabetes mellitus
DNAR	Did not attempt resuscitation
DNR	Do-not-resuscitate
DOB	Date of birth
DOE	Dyspnea on exertion
DOS	Dead on scene
DPT	Diphtheria, pertussis, tetanus
DT's	Delirium tremens
D5W	Dextrose 5% in water
D10W	Dextrose 10% in water
D25W	Dextrose 25% in water
D50	50% Dextrose
DVT	Deep vein thrombosis
Dx	Diagnosis

-E-

ECG/EKG	Electrocardiogram
EDC	Estimated date of confinement
EEG	Electroencephalogram
EF	Ejection fraction
e.g.	For example
EPS	Electrophysiological study
ER/ED	Emergency room/department
Epi	Epinephrine
Est.	Estimated
ESRD	End stage renal disease
ETA	Estimated time of arrival
ET	Endotracheal
ETCO₂	End-tidal carbon dioxide

ETOH	Ethyl alcohol, alcoholic beverage
ETT	Endotracheal tube
EXP	Expansion
EXT	Extremity(s)

-F-

F	Female
F[°]	Fahrenheit
FBAO	Foreign body airway obstruction
FHx	Family history
FHR	Fetal heart rate
Fr	French
FSP	Full spinal precaution
FUO	Fever of unknown origin
Fx	Fracture

-G-

G (+ #)	Gravida (G3, G4 etc.)
GCS	Glasgow coma scale/score
GERD	Gastroesophageal reflux disease
GI	Gastrointestinal
Gm, g	Gram
Gtts	Drops
GU	Genitourinary
GYN	Gynecology

-H-

h, hr	Hour
H/A	Headache
HAV	Hepatitis A virus
HBV	Hepatitis B virus
HCTZ	Hydrochlorothiazide
HCV	Hepatitis C virus
HEENT	Head, eyes, ears, nose, throat
H&H	Hemoglobin and hematocrit
Hg	Mercury
HIV±	Human immunodeficiency virus
HR	Heart rate
HRT	Hormone replacement therapy
hs	At bedtime
HTN	Hypertension
Hx	History

-I-

ICD	Implanted cardioverter defibrillator
ICP	Intracranial pressure
ICU	Intensive care unit
IDDM/DM I	Insulin dependent diabetes mellitus (Type I)

ILS	Intermediate life support
IM	Intramuscular
IMV	Intermittent mechanical ventilation
Inf	Inferior
IO	Intraosseous
IPPB	Intermittent positive pressure breathing
IU	International units
IV	Intravenous
IVP	IV push
IVR	Idioventricular rhythm

-J-

J	Joules
JVD	Jugular venous distention

-K-

K+	Potassium
KED	Kendrick extrication device
KTD	Kendrick traction device
KVO	Keep vein open
Kg	Kilogram

-L-

L	Left or Liter
L spine	Lumbar spine
L&D	Labor and delivery
L/S	Lung sounds
Lac	Laceration
LAD	Left axis deviation / left anterior descending
Lbs	Pounds
LBBS	Left bundle branch block
LGL	Lown-Ganong-Levine syndrome
Liq	Liquid
LLQ	Lower left quadrant
LMA	Laryngeal Mask Airway
LMP	Last menstrual period
LOC	Level/loss of consciousness
Lpm	Liter per minute
LR	Lactated Ringer's
LSB	Long spine board
LSD	Lysergic acid diethylamide
LUQ	Left upper quadrant
LVAD	Left Ventricular Assist Device
LVH	Left ventricular hypertrophy

-M-

m	Meter
M	Male

mA	Milliamperes
mg	Milligram
MAE	Moves all extremities
MAP	Mean arterial pressure
Mcg	Microgram
MCL	Midclavicular line, modified chest lead
MDI	Metered dose inhaler
mEq	Milliequivalent
mL	Milliliter
mm	Millimeter
MMR	Measles, mumps, rubella
MOI	Mechanism of injury
Mph	Miles per hour
MS	Morphine sulfate, Multiple Sclerosis
MVA	Motor vehicle accident
MVP	Mitral valve prolapse

-N-

Na+	Sodium
NAD	No apparent / acute distress
N/C	Nasal canula
NES	Non-English Speaking
NGT	Nasogastric tube
NH	Nursing home
NICU	Neurological, neonatal intensive care unit
NIDDM/DM II	Non insulin dependent diabetes mellitus (Type II)
NKA	No known allergies
NKDA	No known drug allergies
NMB	Neuromuscular blockade
NOI	No obvious injury
NP	Nurse Practitioner
NPA	Nasopharyngeal airway
NPO	Nothing by mouth
NRB	Non-rebreather mask
NS	Normal saline
NSAID	Non-steroidal anti-inflammatory drug
NT	Nasotracheal
NTG	Nitroglycerin
N/V/D	Nausea, vomiting, diarrhea

-O-

O₂	Oxygen
OB	Obstetrics
OBS	Organic brain syndrome
OBV	Obvious
OD	Overdose, right eye (oculus dexter)
OLMC	On-line medical consultation
OOH	Out of hospital

OPA	Oropharyngeal airway
OPP	Organophosphate poisoning
OR	Operating room
OS	Left eye (oculus sinister)
oz.	Ounce
Ø	No or none

-P-

p	After
p.c.	After meals
P (+ #)	Parity (P3, P4 etc)
PA	Physician assistant, pulmonary artery
PAI	Pharmacologically assisted intubation, Pre-Arrival Instructions
PASTMED	Provoking incident, Associated chest pain, Sputum production, Time of onset, Meds, Exercise tolerance, Diagnosis
PCI	Percutaneous coronary intervention
pCO₂	Carbon dioxide pressure
PCP	Phencyclidine, Primary Care Physician
PCT	Patient care to
PE	Physical exam, pulmonary emboli, pulmonary edema
PEA	Pulseless electrical activity
PEEP	Positive end expiratory pressure
PERRL	Pupils equal round reactive to light
PICU	Pediatric intensive care unit
PID	Pelvic inflammatory disease
PMD	Primary/Private medical doctor
Pn	Pain
PND	Paroxysmal nocturnal dyspnea
PO₂	Partial pressure of oxygen
PO	By mouth
POC	Position of comfort
post.	Posterior
POV	Privately operated/owned vehicle
p.r.	Per rectum
PRBC's	Packed red blood cells
PRN	As needed
PSVT	Paroxysmal supraventricular tachycardia
Pt.	Patient
PTA/PTOA	Prior to (our) arrival
PTS	Pediatric trauma score
PVC	Premature ventricular contraction
PVT	Polymorphic ventricular tachycardia
P/W/D	Pink warm and dry

-Q-

Q	Every
Qh	Every hour
q.i.d.	Four times a day

-R-

R	Right
RAD	Right axis deviation, reactive airway disease
RBBB	Right bundle branch block
Rbc	Red blood cell, red blood (cell) count
RCA	Right coronary artery
RHD	Rheumatic heart disease
RLQ	Right lower quadrant
ROSC	Return of spontaneous circulation
+ROM	Positive range of motion
RN	Registered nurse
RR	Respiratory rate
RSV	Respiratory syncytial virus
RTS	Revised trauma score
RUQ	Right upper quadrant
Rx	Prescription

-S-

—	Without
s/s	Signs / symptoms
SAO₂	Oxygen saturation of arterial oxyhemoglobin
SARS	Severe acute respiratory syndrome
SBP	Systolic blood pressure
SC, SQ	Subcutaneous
SCI	Spinal cord injury
SCUBA	Self contained underwater breathing apparatus
SIDS	Sudden infant death syndrome
SL	Sublingual, Saline Lock
SOAPE	S ubjective, O bjective, A ssessment, P lan, E nroute
SOB	Shortness of breath
SRDA	Spinal Restriction Decision Algorithm
SROM	Spontaneous Rupture of Membranes
St	States
STD	Sexually transmitted disease
SUV	Sport utility vehicle
SVT	Supraventricular tachycardia
Sx	Symptoms

-T-

T spine	Thoracic spine
TBI	Traumatic brain injury
Temp	Temperature
tab	Tablet
TB	Tuberculosis
Tbsp	Tablespoon
TCP	Transcutaneous pacing

TCA	Tricyclic antidepressant
TdP	Torsades de Pointes
TIA	Transient ischemic attack
t.i.d.	Three times a day
TKO	To keep open
TOT	Turned Over To
Tsp	Teaspoon
Tx	Treatment

-U-

u	Unit
µg	microgram
U/A	Upon arrival, urine analysis
URI	Upper respiratory infection
UTI	Urinary tract infection
UTL	Unable to locate
UTO	Unable to obtain

-V-

VD	Venereal disease
Vol	Volume
VO	Verbal order
VF	Ventricular fibrillation
VS	Vital signs
Vt	Tidal volume
VT	Ventricular tachycardia

-W-

w/	With
w/o	Without, wide open
WDWN	Well developed, well nourished
WNL	Within normal limits
WPW	Wolf-Parkinson-White

-X-

X-fer	ransfer
X-prt	Transport

-Y-

y/o	Years old
------------	-----------

-Symbols-

α	Alpha
β	Beta
@	At
?	Questionable, possible
♀	Female
♂	Male

1°	First degree
2°	Second degree
3°	Third degree
x	Times
Δ	Delta (change)
+	Positive
–	Negative
=	Equal
≠	Not equal to
≈	Approximately
↓	Decreased / below / lower
↑	Elevated / increased / upper
→	Move/went to
↔	Between
#	Number

Official

Chief Complaint Differential Diagnosis	Paramedic	◆
	EMT Intermediate	◆
	EMT Basic	◆

Every Patient presents with a chief complaint that can help lead us to a diagnosis. The key is to be able to extend your training to expound upon the chief complaint, develop a differential diagnosis and begin an assessment and treatment plan that is appropriate. In every situation a quick way to determine a quick, non-exhaustive differential diagnosis is to use the acronym **Vitamin Cops**. In patients who have lost consciousness the quick differential is contained in the acronym **AEIOU TIPS**. In this section I will attempt to cover the most common serious or life threatening conditions from both a medical and trauma perspective to assist in your on-scene assessment and treatment.

General Differential Diagnosis

V – Vascular conditions
 I – Iatrogenic (Treatment induced), Infection
 T – Trauma
 A - Allergic
 M – Metabolic (Thyroid, Acidosis, Steroid induced)
 I – Insulin (Diabetes related)
 N – Neoplasm (Cancer)

 C – CO (Carbon Monoxide) or CN (Cyanide)
 O – Oxygen related
 P - Psychiatric
 S – Seizures or Stroke

Loss of Consciousness Differential Diagnosis

A – Alcohol or Acidosis
 E - Epilepsy
 I - Infection
 O – Overdose or Oxygen related
 U – Uremia (From Kidney Failure)

 T – Trauma or Tumor in Brain
 I – Insulin (Diabetes Related) or Iatrogenic (Treatment Induced)
 P - Psychosis
 S – Seizure or Stroke

Medical Chief Complaint Differential Diagnoses

The purpose of this list is to assist trainers in providing a way to identify and treat common emergencies in the field. This list should **not** be considered complete or exhaustive in any way. The differential diagnosis of abdominal itself can exceed more than 100 different causes.

The list of applied Patient Care Guidelines is simplified for this document. Only one guideline is applied to each diagnosis, however, every situation will be different and often more than one guideline may be applied.

It should always be remembered that the Core Principles apply to every patient and we should always address the airway, breathing, circulation and disability of the patient in attempting to arrive at a diagnosis and treatment. Sometimes we will only have the time or need to apply the ABC's.

Clinical judgement on scene will help you to assess the appropriate use and application of the guidelines.

Chief Complaint - Med	Differential Diagnosis	Principle Patient Care Guidelines
Abdominal Pain - Diffuse	Black Widow Bite	Pain/Anxiety Management
	Diabetic Ketoacidosis	Glucose Abnormalities Hypoglycemia/Hyperglycemia
	Intussusceptions	Nausea / Vomiting
	Perforated Bowel	Nausea / Vomiting
	Small Bowel Obstruction	Nausea / Vomiting
Abdominal Pain - LLQ	Abdominal Aortic Aneurysm	Hypotension / Hypoperfusion (Non-Traumatic)
	Diverticulitis	Pain/Anxiety Management
	Ovarian Torsion	Pain/Anxiety Management
	Sigmoid Volvulus	Nausea / Vomiting
	Testicular Torsion	Pain/Anxiety Management
Abdominal Pain - LUQ	Colitis	Pain/Anxiety Management
	Gastritis/Ulcer	Nausea / Vomiting
	LLL Pneumonia	Reactive or Obstructive Airway Disease
	Pancreatitis	Pain/Anxiety Management
	Splenic Infarction	Pain/Anxiety Management
Abdominal Pain - RLQ	Appendicitis	Pain/Anxiety Management
	Ovarian Torsion	Pain/Anxiety Management
	PID	Pain/Anxiety Management
	Testicular Torsion	Pain/Anxiety Management
	Ureterolithiasis	Pain/Anxiety Management
Abdominal Pain - RUQ	Ascending Cholangitis	Pain/Anxiety Management
	Cholecystitis	Pain/Anxiety Management
	Hepatitis	Pain/Anxiety Management
	Pulmonary Embolus	Pain/Anxiety Management
	RLL Pneumonia	Reactive or Obstructive Airway Disease

<u>Chief Complaint - Med</u>	<u>Differential Diagnosis</u>	<u>Principle Patient Care Guidelines</u>
Altered Mental Status	Alcohol Intoxication	Overdose
	Hypoglycemia	Glucose Abnormalities Hypoglycemia/Hyperglycemia
	Hypoxemia	Reactive or Obstructive Airway Disease
	Overdose	Overdose
	Psychosis	Violent Patient / Chemical Sedation
	Seizure	Seizures
	Sepsis	Hypotension / Hypoperfusion (Non-Traumatic)
	Stroke	Stroke
	Trauma - Head	Stroke
	Uremia	Nausea / Vomiting
Anxiety	Hypoxemia	Reactive or Obstructive Airway Disease
	Hysteria	Pain/Anxiety Management
	Medication/Toxin Induced	Toxic Exposure
	Primary Panic Disorder	Pain/Anxiety Management
	Situational Panic Attack	Pain/Anxiety Management
Assault	Adult Abuse	Pain/Anxiety Management
	Child Abuse	Pain/Anxiety Management
	Munchausen's Syndrome	Violent Patient / Chemical Sedation
	Rape	Pain/Anxiety Management
	Spousal Abuse	Pain/Anxiety Management
Back Pain	Abdominal Aortic Aneurysm	Hypotension / Hypoperfusion (Non-Traumatic)
	Muscular Spasm/Strain	Pain/Anxiety Management
	Radiculopathy	Pain/Anxiety Management
	Ureterolithiasis	Pain/Anxiety Management
	Vertebral Compression Fracture	Pain/Anxiety Management
Blisters	Chicken Pox	Allergic Reaction/Anaphylaxis
	Cocksackie (Hand, Foot, Mouth)	Allergic Reaction/Anaphylaxis
	Herpes Simplex Virus	Allergic Reaction/Anaphylaxis
	Poison Ivy/Oak	Allergic Reaction/Anaphylaxis
	Shingles (Herpes Zoster)	Pain/Anxiety Management
Chest Pain	ACS (Acute Coronary Syndrome)	Acute Coronary Syndromes (ACS) / Acute Myocardial Infarction
	Costochondritis	Pain/Anxiety Management
	Dissecting Thoracic Aneurysm	Hypotension / Hypoperfusion (Non-Traumatic)
	Esophageal Spasm	Nausea / Vomiting
	Pulmonary Embolus	Pain/Anxiety Management
Cough	ACE inhibitor reaction	Reactive or Obstructive Airway Disease
	Aspiration	Reactive or Obstructive Airway Disease
	Bronchitis/Pneumonia	Reactive or Obstructive Airway Disease
	Obstructive Lung Disease	Reactive or Obstructive Airway Disease
	Tracheal Foreign Body	Reactive or Obstructive Airway Disease
Crying - Infant	Corneal Abrasion	Pain/Anxiety Management
	Localized Infections	Pain/Anxiety Management
	Meningitis	Pain/Anxiety Management
	Occult Fractures	Pain/Anxiety Management
	Tourniquet Syndrome	Pain/Anxiety Management

<u>Chief Complaint - Med</u>	<u>Differential Diagnosis</u>	<u>Principle Patient Care Guidelines</u>
Decreased Walking	Arthritis	Pain/Anxiety Management
	Injury	Pain/Anxiety Management
	Malnutrition	Nausea / Vomiting
	Muscular Disease	Pain/Anxiety Management
	Sepsis	Hypotension / Hypoperfusion (Non-Traumatic)
Depression	Abuse	Pain/Anxiety Management
	Drug Abuse	Overdose
	Major Depression	Pain/Anxiety Management
	Medication/Toxin Induced	Toxic Exposure
	Situational Dysphoria	Pain/Anxiety Management
Diarrhea	Bacterial	Nausea / Vomiting
	Colitis	Nausea / Vomiting
	Medication Induced	Nausea / Vomiting
	Parasitic	Nausea / Vomiting
	Viral	Nausea / Vomiting
Dizzy	Benign Positional Vertigo	Nausea / Vomiting
	Cardiac Arrhythmia	Cardiac Patient Care Guidelines
	Cerebellar Stroke	Nausea / Vomiting
	Dehydration/Hypovolemia	Hypotension / Hypoperfusion (Non-Traumatic)
	Medication/Toxin Induced	Toxic Exposure
Dysuria	Herpes Simplex	Pain/Anxiety Management
	Injury	Pain/Anxiety Management
	Rape	Pain/Anxiety Management
	Urinary Tract Infection	Pain/Anxiety Management
	Vaginitis	Allergic Reaction/Anaphylaxis
Ear Drainage	Auricular Bug Infestation	Pain/Anxiety Management
	Auricular Foreign Body	Pain/Anxiety Management
	Functional Ear Tubes	Pain/Anxiety Management
	Otitis Externa	Pain/Anxiety Management
	Ruptured Tympanic Membrane	Pain/Anxiety Management
Ear Pain	Atmospheric Pressure Induced	Pain/Anxiety Management
	Auricular Foreign Body	Pain/Anxiety Management
	Auricular Injury	Pain/Anxiety Management
	Otitis Externa	Pain/Anxiety Management
	Otitis Media	Pain/Anxiety Management
Epistaxis	Allergic	Allergic Reaction/Anaphylaxis
	Hypertension	Pain/Anxiety Management
	Injury	Pain/Anxiety Management
	Medication (eg., Coumadin)	Hypotension / Hypoperfusion (Non-Traumatic)
	Post Surgical	Hypotension / Hypoperfusion (Non-Traumatic)
Eye Drainage	Allergic Conjunctivitis	Allergic Reaction/Anaphylaxis
	Bacterial Conjunctivitis	Allergic Reaction/Anaphylaxis
	Chemical Conjunctivitis	Pain/Anxiety Management
	Tear Duct Occlusion	Allergic Reaction/Anaphylaxis
	Viral Conjunctivitis	Allergic Reaction/Anaphylaxis

<u>Chief Complaint - Med</u>	<u>Differential Diagnosis</u>	<u>Principle Patient Care Guidelines</u>
Eye Injury	Corneal Abrasion	Pain/Anxiety Management
	Hyphema	Pain/Anxiety Management
	Ocular Foreign Body	Pain/Anxiety Management
	Ocular Globe Rupture	Pain/Anxiety Management
	Traumatic Iritis	Pain/Anxiety Management
Eye Pain	Acute Angle Glaucoma	Pain/Anxiety Management
	Corneal Abrasion	Pain/Anxiety Management
	Corneal Foreign Body	Pain/Anxiety Management
	Iritis	Pain/Anxiety Management
	UV/Chemical Keratitis	Pain/Anxiety Management
Fever	Blood Transfusion Reaction	Hypotension / Hypoperfusion (Non-Traumatic)
	Hyperthermia	Environmental Temperature Emergencies
	Infection	Environmental Temperature Emergencies
	Medication/Toxin Induced	Environmental Temperature Emergencies
	Neoplasm	Environmental Temperature Emergencies
Foreign Body	Auricular	Pain/Anxiety Management
	Nasal	Pain/Anxiety Management
	Penile	Pain/Anxiety Management
	Rectal	Pain/Anxiety Management
	Vaginal	Pain/Anxiety Management
Hallucinations	Alcohol Induced	Violent Patient / Chemical Sedation
	Intracranial Tumors	Violent Patient / Chemical Sedation
	Medication/Toxin Induced	Violent Patient / Chemical Sedation
	Psychosis	Violent Patient / Chemical Sedation
	Withdrawal Syndromes	Violent Patient / Chemical Sedation
Headache	Intracranial Tumors	Pain/Anxiety Management
	Meningitis	Pain/Anxiety Management
	Migraine Headache	Pain/Anxiety Management
	Subarachnoid Hemorrhage	Pain/Anxiety Management
	Tension Cephalgia	Pain/Anxiety Management
Hematemesis (Vomit)	Esophageal Varices	Hypotension / Hypoperfusion (Non-Traumatic)
	Gastric Ulcer	Hypotension / Hypoperfusion (Non-Traumatic)
	Mallory Weiss Tear	Hypotension / Hypoperfusion (Non-Traumatic)
	Pharyngitis	Hypotension / Hypoperfusion (Non-Traumatic)
	Post Surgical/Injury	Hypotension / Hypoperfusion (Non-Traumatic)
Hematochezia (Rectal)	Anal Fissure	Hypotension / Hypoperfusion (Non-Traumatic)
	Colitis	Hypotension / Hypoperfusion (Non-Traumatic)
	Diverticulosis	Hypotension / Hypoperfusion (Non-Traumatic)
	Hemorrhoids	Hypotension / Hypoperfusion (Non-Traumatic)
	Rectal Foreign Body	Hypotension / Hypoperfusion (Non-Traumatic)
Hematuria (Urine)	Bladder Tumor	Hypotension / Hypoperfusion (Non-Traumatic)
	Interstitial Cystitis	Hypotension / Hypoperfusion (Non-Traumatic)
	Post Surgical/Injury	Hypotension / Hypoperfusion (Non-Traumatic)
	Urethral Foreign Body	Hypotension / Hypoperfusion (Non-Traumatic)
	UTI	Hypotension / Hypoperfusion (Non-Traumatic)

<u>Chief Complaint - Med</u>	<u>Differential Diagnosis</u>	<u>Principle Patient Care Guidelines</u>
Hemoptysis (Cough)	Bronchiectasis	Hypotension / Hypoperfusion (Non-Traumatic)
	Lung Cancer	Hypotension / Hypoperfusion (Non-Traumatic)
	Oral, Nasal or Esophageal	Hypotension / Hypoperfusion (Non-Traumatic)
	Pulmonary Infarction	Hypotension / Hypoperfusion (Non-Traumatic)
	Tuberculosis	Hypotension / Hypoperfusion (Non-Traumatic)
Hyperglycemia	Catecholamine Release	Glucose Abnormalities Hypoglycemia/Hyperglycemia
	Diabetes	Glucose Abnormalities Hypoglycemia/Hyperglycemia
	Medication/Toxin Induced	Glucose Abnormalities Hypoglycemia/Hyperglycemia
	Post Surgical/Injury	Glucose Abnormalities Hypoglycemia/Hyperglycemia
	Pre-Diabetes	Glucose Abnormalities Hypoglycemia/Hyperglycemia
Hypertension	Catecholamine Crisis	Pain/Anxiety Management
	Cushings Syndrome	Pain/Anxiety Management
	Essential	Pain/Anxiety Management
	Overdose	Pain/Anxiety Management
	Thyrotoxicosis	Pain/Anxiety Management
Hypoglycemia	Exercise Induced	Glucose Abnormalities Hypoglycemia/Hyperglycemia
	Insulin Reaction	Glucose Abnormalities Hypoglycemia/Hyperglycemia
	Insulinoma	Glucose Abnormalities Hypoglycemia/Hyperglycemia
	Malnutrition	Glucose Abnormalities Hypoglycemia/Hyperglycemia
	Medication/Toxin Induced	Glucose Abnormalities Hypoglycemia/Hyperglycemia
Hypotension	Adrenal Crisis	Hypotension / Hypoperfusion (Non-Traumatic)
	Cardiac Failure	Hypotension / Hypoperfusion (Non-Traumatic)
	Hemorrhage	Hypotension / Hypoperfusion (Non-Traumatic)
	Medication/Toxin Induced	Hypotension / Hypoperfusion (Non-Traumatic)
	Sepsis	Hypotension / Hypoperfusion (Non-Traumatic)
	Spinal Cord Rupture	Hypotension / Hypoperfusion (Non-Traumatic)
Hypothermia	Environmental (Cold)	Environmental Temperature Emergencies
	Hypothyroidism	Environmental Temperature Emergencies
	Medication/Toxin Induced	Environmental Temperature Emergencies
	Post Surgical/Injury	Environmental Temperature Emergencies
	Sepsis	Environmental Temperature Emergencies
Joint Pain/Swelling	Allergic	Allergic Reaction/Anaphylaxis
	Arthritis	Pain/Anxiety Management
	Infectious	Pain/Anxiety Management
	Injury	Pain/Anxiety Management
	Venous Claudication	Pain/Anxiety Management
Numbness	Hyperventilation	Pain/Anxiety Management
	Medication/Toxin Induced	Toxic Exposure
	Neuralgia	Pain/Anxiety Management
	Post Surgical/Injury	Pain/Anxiety Management
	Stroke	Stroke

<u>Chief Complaint - Med</u>	<u>Differential Diagnosis</u>	<u>Principle Patient Care Guidelines</u>
Overdose	Antidepressants	Overdose
	Benzodiazepines	Overdose
	Narcotic	Overdose
	Sympathomimetics (ie., Cocaine)	Overdose
	Tylenol Products	Overdose
Palpitations	Anxiety Reaction	Pain/Anxiety Management
	Cardiac Arrhythmias	Tachycardia – Narrow Complex (with Pulses)
	Catecholamine Crisis	Pain/Anxiety Management
	Sympathomimetics (ie., Cocaine)	Pain/Anxiety Management
	Thyrotoxicosis	Pain/Anxiety Management
Penile Complaints	Foreign Bodies	Pain/Anxiety Management
	Infections	Pain/Anxiety Management
	Priapism	Pain/Anxiety Management
	Rash/Lesions	Pain/Anxiety Management
	Ruptured Bulbous Cavernosa	Pain/Anxiety Management
Pregnancy	Hyperemesis Gravidarum	Nausea / Vomiting
	Imminent Delivery	Obstetrical Emergencies
	Infection	Hypotension / Hypoperfusion (Non-Traumatic)
	Injury	Pain/Anxiety Management
	Vaginal Bleeding	Obstetrical Emergencies
Rash	Abrasion	Pain/Anxiety Management
	Allergy	Allergic Reaction/Anaphylaxis
	Bites	Allergic Reaction/Anaphylaxis
	Fungus	Pain/Anxiety Management
	Infection	Hypotension / Hypoperfusion (Non-Traumatic)
Scrotal Pain/Swelling	Epididymal - Orchitis	Pain/Anxiety Management
	Hernia	Pain/Anxiety Management
	Hydrocele	Pain/Anxiety Management
	Testicular Torsion	Pain/Anxiety Management
	Ureterolithiasis	Pain/Anxiety Management
Seizure	Intracranial Hemorrhage	Seizures
	Intracranial Lesion (ie., Tumor)	Seizures
	Medication/Toxin Induced	Seizures
	Primary Seizure Disorder	Seizures
	Withdrawal Syndromes	Seizures
Shaking/Spasms	Electrolyte Abnormalities	Pain/Anxiety Management
	Hyperventilation	Pain/Anxiety Management
	Hypothermia	Environmental Temperature Emergencies
	Medication/Toxin Induced	Toxic Exposure
	Partial Seizures	Seizures
SOB	Allergic Reaction	Allergic Reaction/Anaphylaxis
	Congestive Heart Failure	Congestive Heart Failure/Pulmonary Edema
	Infection (eg., Pneumonia)	Reactive or Obstructive Airway Disease
	Obstructive Airway Disease	Reactive or Obstructive Airway Disease
	Pulmonary Embolus	Pain/Anxiety Management

<u>Chief Complaint - Med</u>	<u>Differential Diagnosis</u>	<u>Principle Patient Care Guidelines</u>
Sore Throat	Bacterial Tracheitis	Pain/Anxiety Management
	Epiglottitis	Reactive or Obstructive Airway Disease
	Pharyngitis	Pain/Anxiety Management
	Posterior pharyngeal Abscess	Pain/Anxiety Management
	Tonsillitis or Abscess	Pain/Anxiety Management
Stridor	Airway Foreign Body	Reactive or Obstructive Airway Disease
	Allergic Reaction	Allergic Reaction/Anaphylaxis
	Anxiety Reaction	Pain/Anxiety Management
	Croup	Reactive or Obstructive Airway Disease
	Epiglottitis	Reactive or Obstructive Airway Disease
Stroke Symptoms	CVA/TIA	Stroke
	Electrolyte Abnormality	Stroke
	Hypoglycemia	Stroke
	Medication/Toxin Induced	Stroke
	Post Ictal	Stroke
Swelling	Allergy	Allergic Reaction/Anaphylaxis
	Congestive Failure	Congestive Heart Failure/Pulmonary Edema
	Infection	Hypotension / Hypoperfusion (Non-Traumatic)
	Snake Bite	Snake Bites
	Spider/Bug Bite	Pain/Anxiety Management
Syncope	Cardiac Arrhythmia	Cardiac Patient Care Guidelines
	Psychological	Violent Patient / Chemical Sedation
	Pulmonary Embolus	Pain/Anxiety Management
	Seizure	Seizures
	Stroke	Stroke
Tachycardia	Cardiac Arrhythmias	Cardiac Patient Care Guidelines
	Catecholamine Crisis	Pain/Anxiety Management
	Medication/Toxin Induced	Toxic Exposure
	Sympathomimetics (ie., Cocaine)	Pain/Anxiety Management
	Thyrotoxicosis	Pain/Anxiety Management
Vaginal Bleeding	Hormonal Imbalance	Obstetrical Emergencies
	Medication/Toxin Induced	Obstetrical Emergencies
	Menstrual Period	Obstetrical Emergencies
	Miscarriage	Obstetrical Emergencies
	Uterine Neoplasm	Obstetrical Emergencies
Vaginal Discharge	Fungal Infection	Pain/Anxiety Management
	PID	Pain/Anxiety Management
	Pre-Menstrual Discharge	Pain/Anxiety Management
	Urination	Pain/Anxiety Management
	Vaginitis	Pain/Anxiety Management
Visual Changes	Infection	Pain/Anxiety Management
	Medications/Toxin Induced	Toxic Exposure
	Occipital Stroke	Stroke
	Ocular Injury	Pain/Anxiety Management
	Vascular Occlusion	Pain/Anxiety Management

<u>Chief Complaint - Med</u>	<u>Differential Diagnosis</u>	<u>Principle Patient Care Guidelines</u>
Vomiting	Infection	Nausea / Vomiting
	Intracranial Lesion	Nausea / Vomiting
	Medications/Toxin Induced	Nausea / Vomiting
	Pain Induced	Nausea / Vomiting
	Small Bowel Obstruction	Nausea / Vomiting
Weakness	Dehydration	Hypotension / Hypoperfusion (Non-Traumatic)
	Electrolyte Abnormality	Hypotension / Hypoperfusion (Non-Traumatic)
	Hyperthermia	Environmental Temperature Emergencies
	Infection	Hypotension / Hypoperfusion (Non-Traumatic)
	Medications/Toxin Induced	Toxic Exposure
Wheezing	Artificially Induced	Reactive or Obstructive Airway Disease
	Infection	Reactive or Obstructive Airway Disease
	Medications/Toxin Induced	Reactive or Obstructive Airway Disease
	Obstruction Lung Disease	Reactive or Obstructive Airway Disease
	Pulmonary Foreign Body	Reactive or Obstructive Airway Disease

Trauma Chief Complaint Differential Diagnosis

This section deals primarily with Trauma related disease. It should always be remembered that even though you may be on the scene of an accident or trauma that medical conditions unrelated to the trauma may play a significant factor and may even be the main cause of the patient's problems and the ultimate treatment.

Always remember that every Trauma patient should be evaluated following the same approach dealing with the Airway, Breathing, Circulation and Disability issues on your primary survey prior to moving on to your secondary survey.

Once again this not an exhaustive list of the only possible diagnoses but a tool for teaching.

<u>Trauma Chief Complaint</u>	<u>Differential Diagnosis</u>	<u>Patient Care Guidelines</u>
Abdominal Pain - LLQ	Bladder Rupture	Pain/Anxiety Management
	Hip Fracture	Pain/Anxiety Management
	Pelvic Fracture	Pain/Anxiety Management
	Sigmoid Colon Injury	Pain/Anxiety Management
	Testicular Trauma	Pain/Anxiety Management
Abdominal Pain - LUQ	Fractured Rib	Pain/Anxiety Management
	Pancreatic Injury	Pain/Anxiety Management
	Ruptured Bowel	Pain/Anxiety Management
	Ruptured Diaphragm	Pain/Anxiety Management
	Splenic Fracture	Pain/Anxiety Management
Abdominal Pain - RLQ	Bladder Rupture	Pain/Anxiety Management
	Hip Fracture	Pain/Anxiety Management
	Intra-abdominal Bleeding	Hypotension / Hypoperfusion (Non-Traumatic)
	Pelvic Fracture	Pain/Anxiety Management
	Testicular Trauma	Pain/Anxiety Management
Abdominal Pain - RUQ	Duodenal Hematoma	Nausea / Vomiting
	Hemothorax	Pain/Anxiety Management
	Liver Laceration	Hypotension / Hypoperfusion (Non-Traumatic)
	Rib Fracture	Pain/Anxiety Management
	Ruptured Bowel	Pain/Anxiety Management
Altered Mental Status	Drug Intoxication	Overdose
	Head Injury	Traumatic Brain Injury
	Hypoglycemia	Glucose Abnormalities Hypoglycemia/Hyperglycemia
	Hypotension	Hypotension / Hypoperfusion (Non-Traumatic)
	Hypoxemia	Reactive or Obstructive Airway Disease
Anxiety	Drug Intoxication	Overdose
	Head Injury	Traumatic Brain Injury
	Hypoxemia	Reactive or Obstructive Airway Disease
	Pain Induced	Pain/Anxiety Management
	Toxin Exposure	Toxin Exposure
Back Pain	Aortic Injury	Hypotension / Hypoperfusion (Non-Traumatic)
	Kidney Injury	Pain/Anxiety Management
	Radiculopathy	Pain/Anxiety Management
	Rib Fracture	Pain/Anxiety Management
	Vertebral Fracture	Pain/Anxiety Management

<u>Trauma Chief Complaint</u>	<u>Differential Diagnosis</u>	<u>Patient Care Guidelines</u>
Chest Pain	Boorhaave's Syndrome	Pain/Anxiety Management
	Cardiac Contusion	Hypotension / Hypoperfusion (Non-Traumatic)
	Rib Fractures	Pain/Anxiety Management
	Ruptured Diaphragm	Pain/Anxiety Management
	Sternal Fracture	Pain/Anxiety Management
Extremity	Amputations	Amputations
	Crush Injury	Crush Injuries
	Dislocations	Skeletal Injuries
	Fracture	Pain/Anxiety Management
	Strain/Tear ligaments	Soft Tissue Injuries
Eye Pain	Chemical Keratitis	Pain/Anxiety Management
	Corneal Abrasion	Pain/Anxiety Management
	Hyphema	Pain/Anxiety Management
	Ocular Penetration	Pain/Anxiety Management
	Orbital Fracture	Pain/Anxiety Management
Facial Pain	Blowout Orbital Fracture	Pain/Anxiety Management
	Chemical Burns	Burns
	Jaw Fracture	Pain/Anxiety Management
	Lafort Fractures	Pain/Anxiety Management
	Nasal Fracture	Pain/Anxiety Management
Hallucinations	Drug Induced	Violent Patient / Chemical Sedation
	Head Injury	Traumatic Brain Injury
	Hypotension	Hypotension / Hypoperfusion (Non-Traumatic)
	Hypoxemia	Reactive or Obstructive Airway Disease
	Toxin Exposure	Toxin Exposure
Headache	Head Injury	Traumatic Brain Injury
	Hypertension	Pain/Anxiety Management
	Hypotension	Hypotension / Hypoperfusion (Non-Traumatic)
	Post Ictal	Seizures
	Toxin Exposure	Toxin Exposure
Hematuria	Bladder Rupture	Pain/Anxiety Management
	Kidney Injury	Pain/Anxiety Management
	Pelvic Fracture	Pain/Anxiety Management
	Penile Injury	Pain/Anxiety Management
	Testicular Trauma	Pain/Anxiety Management
Neck Pain	Dissecting Carotid Artery	Hypotension / Hypoperfusion (Non-Traumatic)
	Dissecting Vertebral Artery	Hypotension / Hypoperfusion (Non-Traumatic)
	Muscular Strain	Pain/Anxiety Management
	Tracheal Foreign Body	Reactive or Obstructive Airway Disease
	Vertebral Fracture	Pain/Anxiety Management
Numbness	Cervical Injury	Pain/Anxiety Management
	Compression Neuropathy	Pain/Anxiety Management
	Head Injury	Traumatic Brain Injury
	Hyperventilation	Pain/Anxiety Management
	Spinal Cord Compression	Spinal Cord Injuries

<u>Trauma Chief Complaint</u>	<u>Differential Diagnosis</u>	<u>Patient Care Guidelines</u>
Obstetrics	Altered Anatomy and Exam	Obstetrical Emergencies
	Hypotension	Hypotension / Hypoperfusion (Non-Traumatic)
	Pelvic Fractures	Pain/Anxiety Management
	Placental Abruption	Hypotension / Hypoperfusion (Non-Traumatic)
	Ruptured Uterus	Hypotension / Hypoperfusion (Non-Traumatic)
Pelvic Pain	Femur Fracture	Pain/Anxiety Management
	Hip Fracture	Pain/Anxiety Management
	Pelvic Fractures	Pain/Anxiety Management
	Ruptured Bladder	Pain/Anxiety Management
	Testicular Injury	Pain/Anxiety Management
Seizure	Hypoglycemia	Glucose Abnormalities Hypoglycemia/Hyperglycemia
	Hypoxemia	Reactive or Obstructive Airway Disease
	Intracranial Lesion	Traumatic Brain Injury
	Toxin Exposure	Toxin Exposure
	Withdrawal Syndrome	Pain/Anxiety Management
Shortness of Breath	Aspiration	Reactive or Obstructive Airway Disease
	Hemothorax	Reactive or Obstructive Airway Disease
	Pneumothorax	Pneumothorax
	Pulmonary Contusion	Reactive or Obstructive Airway Disease
	Ruptured Diaphragm	Pain/Anxiety Management
Skin	Abrasions	Soft Tissue Injuries
	Burns	Burns
	Lacerations	Soft Tissue Injuries
	Rash	Soft Tissue Injuries
	Toxin Exposure	Toxin Exposure
Stridor	Aspiration	Reactive or Obstructive Airway Disease
	Expanding Neck Hematoma	Reactive or Obstructive Airway Disease
	Larynx Injury	Reactive or Obstructive Airway Disease
	Penetrating Trauma	Reactive or Obstructive Airway Disease
	Tracheal Foreign Body	Reactive or Obstructive Airway Disease
Visual Changes	Chemical Exposure	Toxin Exposure
	Drug Intoxication	Overdose
	Entrapment Syndrome	Pain/Anxiety Management
	Ocular Injury	Pain/Anxiety Management
	Toxin Exposure	Toxin Exposure

Drug Reference Names / Indications

Paramedic	◆
EMT Intermediate	◆
EMT Basic	◆

GENERIC NAME	BRAND NAME	INDICATIONS
ABCIXIMAB	ReoPro	Platelet aggregation inhibitor
ABELCET	Amphotericin B	Refractory Aspergillosis
ACEBUTOLOL	Sectral	beta-blocker
ACETAMINOPHEN	Panadol, Tempra, Tylenol, APAP	Non-Narcotic Analgesic
ACETAZOLAMIDE	Dazamide, Diamox	Carbonic anhydrase inhibitor diuretic
ACETOHEXAMIDE	Dymelor	Oral antidiabetic agent
ACETYLCYSTEINE	Mucomyst	Mucolytic decongestant
ACARBOSE	Precose	Antihyperglycemic for NIDDM
ACLOMETASONE	Alclovate	Steroid anti-inflammatory
ACRIVASTINE	Semprex D	Allergic Rhinitis
ACTH	Cotrosyn, Hp Acthar	Hormone
ACYCLOVIR	Zovirax	Antiviral agent
ADAPALENE	Differen	Topical treatment for acne
ALBENDAZOLE	Albenza	Anthelmintic
ALBUTEROL	Proventil, Ventolin	Bronchodilator
ALCLOMETASONE	Aclovate cream	Topical corticosteroid
ALENDRONATE	Fosamax	Osteoporosis, Paget's disease
ALLOPURINOL	Lopurin, Zyloprim	Antigout agent
ALPHAPRODINE	Nisentil	Narcotic analgesic
ALPRAZOLAM	Xanax	Benzodiazepine antianxiety
ALPROSTADIL	Prostin VR, Caverject	Congenital heart, impotence
ALTEPLASE	Activase	Thrombolytic agent
AMANTADINE	Symmetrel	Antiparkinson and antiviral agent

GENERIC NAME	BRAND NAME	INDICATIONS
AMIKACIN	Amikin	Aminoglycoside antibiotic
AMILORIDE	Midamor, Moduretic	Potassium-sparing diuretic
AMINOCAPROIC	Amicar	Drug for hemostasis
AMINOGLUTETHIMIDE	Cytadren	Hormone antagonist
AMINOPHYLLINE	Phyllocontin, Mudrane Somophyllin,	Bronchodilator
AMINOSALICYLIC ACID	Teebacin, PASER granules	Antituberculosis drug
AMIODARONE	Cordarone	Type III antiarrhythmic
AMITRIPTYLINE	Amitril, Elavil, Endep	Tricyclic antidepressant
AMLODIPINE	Norvasc, Lotrel	Calcium channel blocker
AMOXAPINE	Asendin	Tricyclic antidepressant
AMOXICILLIN	Amoxil, Augmentin, Larotid, Polymox, Trimox	Penicillin antibiotic
AMPHOTERICIN B	Fungizone	Antifungal agent
AMPICILLIN	Amcill, Omnipen, Polycillin,	Penicillin antibiotic
AMRINONE	Inocor	Phosphodiesterase inhibitor
ANISTREPLASE	Eminase	Thrombolytic agent
ANTHRALIN	Anthra-Derm, Lasan creme, Dritho-Scalp	Psoriasis drug
ASTEMIZOLE	Hismanal	Allergic Rhinitis
ATOVAQUONE	Mepron Susp.	PCP pneumonia
ATORVASTATIN CALCIUM	Lipitor	Lipid-lowering drug
ATENOLOL	Tenormin, Tenoretic	Beta Blocker
ATRACURIUM	Tracrium	Non-depolarizing paralytic
AURANOFIN	Ridaura	Antirheumatic drug
AZATADINE	Optimine, Trinalin	Antihistamine
AZATHIOPRINE	Imuran	Immunosuppressant drug
AZELASTINE HCl	Astelin	Nasal antihistamine
AZITHROMYCIN	Zithromax	Macrolide antibiotic
AZTREONAM	Azactam	Monobactam antibiotic
BACAMPICILLIN	Spectrobid	Ampicillin antibiotic

GENERIC NAME	BRAND NAME	INDICATIONS
BACITRACIN	AK-Tracin	Antibiotic
BACLOFEN	Lioresal (DS)	Muscle relaxant for Multiple sclerosis and spinal cord injury
BECLOMETHASONE	Beclovent, Beconase, Vancenase, Vanceril	Locally-acting nasal corticosteroid
BELLADONNA	Belladenal	Antispasmodic
BENAZEPRIL	Lotensin, Lotrel	ACE inhibitor for HTN
BENTOQUATAM	Ivyblock	For poison IVY, Oak, Sumac
BENZTROPINE	Cogentin	Anticholinergic
BEPRIDIL	Vascor	Calcium channel blocker
BETAINE ANHYDROUS	Cystadane	Homocystinuria
BETAMETHASONE	Celestone, Diprolene, Diprosone, Lotrisone	Corticosteroid
BETAXOLOL	Kerlone, Betoptic	Beta blocker for HTN / glaucoma
BETHANECHOL	Urecholine	Urinary retention
BICALUTAMIDE	Casodex	Antiandrogen for prostate Cancer
BIPERIDIN	Akineton	Antiparkinsonian
BISACODYL	Dulcolax, Fleet Bisacodyl	Laxative
BISOPROLOL	Zebeta, Ziac	Beta blocker/ benzothiadiazine
BITOLTEROL MESYLATE	Tornalate	Beta-adrenergic agonist
BRETYLIUM	Bretylol	Antiarrhythmic drug
BRIMONIDINE	Allergan	Glaucoma, Intraocular HTN
BROMFENAC	Duract	NSAID analgesic
BROMOCRIPTINE	Parlodel	Antiparkinson drug / hyperprolactinemia
BROMPHENIRAMINE	Bromphen, Dimetane Elixir, Drixoral	Antihistamine
BUCLIZINE	Bucladin-S	Piperazine antiemetic
BUDESONIDE	Rhinocort	Glucocorticosteroid inhaler
BUMETANIDE	Bumex	Loop diuretic
BUPIVICAINE	Marcaine	Long acting local anesthetic
BUPRENORPHINE	Buprenex	Narcotic analgesic
BUPROPION HCL	Wellbutrin	Aminoketone type antidepressant

GENERIC NAME	BRAND NAME	INDICATIONS
BUTALBITAL	Esgic, Fioricet, Fiorinal	Intermediate acting barbiturate
BUTORPHANOL	Stadol	Narcotic analgesic
CALCIPOTRIENE	Dovonex	Topical agent for Psoriasis
CAPTOPRIL	Capoten, Capozide	ACE inhibitor for HTN / CHF
CARBACHOL	Isopto Carbachol	Miotic drug for glaucoma
CARBIDOPA & LEVODOPA	Atamet, Sinemet	Antiparkinson's drug
CARBAMAZEPINE	Tegretol	Anticonvulsant / Trig neuralgia
CARBINOXAMINE	Rondec, Biohist-LA	Alkylamine-type antihistamine
CARISOPRODOL	Rela, Soma, Soprodol	Muscle relaxant
CARTEOLOL HCl	Cartrol	Beta blocker for HTN
CARVEDILOL	Coreg	Beta blocker for CHF
CEFACLOR	Ceclor	2nd Generation antibiotic
CEFADROXIL	Duricef, Ultracef	1st Generation Cephalosporin
CEFAMANDOLE	Mandol	2nd Generation Cephalosporin
CEFAZOLIN	Ancef, Kefzol	1st Generation Cephalosporin
CEFEPIME	Maxipime	4th Generation Cephalosporin
CEFIXIME	Suprax	3rd Generation Cephalosporin
CEFMETAZOLE	Zefazone	2nd Generation Cephalosporin
CEFONOCID	Monocid	2nd Generation Cephalosporin
CEFOPERAZONE	Cefobid	3rd Generation Cephalosporin
CEFOTAXIME	Claforan	3rd Generation Cephalosporin
CEFOTETAN	Cefotan	2nd Generation Cephalosporin
CEFOXITIN	Mefoxin	2nd Generation Cephalosporin
CEFPODOXIME	Vantin	2nd Generation Cephalosporin
CEFPROZIL	Cefzil	2nd Generation Cephalosporin
CEFTAZADIME	Fortaz, Tazicef	3rd Generation Cephalosporin
CEFTIZOXIME	Cefizox	3rd Generation Cephalosporin
CEFTRIAXONE	Rocephin	3rd Generation Cephalosporin

GENERIC NAME	BRAND NAME	INDICATIONS
CEFUROXIME	Ceftin, Kefurox	2nd Generation Cephalosporin
CEPHADRINE	Anspor	Cephalosporin antibiotic
CEPHALEXIN	Keflex, Keflet	1st Generation Cephalosporin
CEPHALOTHIN	Keflin, Seffin	1st Generation Cephalosporin
CEPHAPRIN	Cefadyl	1st Generation Cephalosporin
CEPHADRINE	Anspor, Velosef	1st Generation Cephalosporin
CHENODIOL	Chenix	Anti-gallstone agent
CHLORAL HYDRATE	Noctec	Non-barbiturate, non-benzodiazepine drug
CHLORAMBUCIL	Leukeran	Anticancer /HIV agent
CHLORAMPHENICOL	Chloromycetin, Ophthocort, Econochlor Opt	Antibiotic, ungrouped
CHLORDIAZEPOXIDE	Libritabs, Librium, Librax	Benzodiazepine anti-anxiety drug
CHLOROQUINE	Aralen	Antimalarial / antirheumatic drug
CHLOROTHIAZIDE	Diuril, Aldoclor, Diupres, Reserpine	Thiazide diuretic
CHLORPHENIRAMINE	Chlor-Trimeton, Histex, Alermine	Antihistamine
CHLORPROMAZINE	Thorazine, Chlorazine	Phenothiazine antipsychotic and anti-emetic
CHLORPROPAMIDE	Diabinese, Glucamide	Oral antidiabetic drug
CHLORTHALIDONE	Hygroton, Thalitone, Combipres, Tenoretic	Thiazide diuretic
CHLORZOXAZONE	Paraflex	Muscle relaxant drug
CHLORPROTHIXENE	Taractan	Major tranquilizer
CHOLESTYRAMINE	Questran, Prevalite	Lipid-lowering hypercholesteremia drug
CICLOPIROX	Loprox	Antifungal drug
CIDOFOVIR	Vistide	Antiviral drug for Cytomegalovirus
CIPROFLOXACIN	Cipro	Fluoroquinolone antibiotic
CIMETIDINE	Tagamet	Anti-ulcer H2 blocker and anti-ulcer agent
CHLOROQUINE	Aralen	Anti-malarial
CLARITHROMYCIN	Biaxin	Macrolide antibiotic
CHLORZOXAZONE	Paraflex, Parafon-Forte	Anti-epileptic agent
CISAPRIDE	Propulsid	Increases gastric emptying

GENERIC NAME	BRAND NAME	INDICATIONS
CLEMASTINE	Tavist	Antihistamine
CLIDINIUM	Quarzan	Antispasmodic
CLINDAMYCIN	Cleocin	Lincosamide antibiotic
CLOFIBRATE	Apramid-S	Lipid-lowering drug
CLOMIPHENE CITRATE	Clomid, Serophene	Drug for infertility
CLOMIPRAMINE	Anafranil	Tricyclic antidepressant
CLONAZEPAM	Clonopin	Benzodiazepine anticonvulsant
CLONIDINE	Catapres, Combipres	Antihypertensive drug
CLORAZEPATE	Tranxene	Benzodiazepine anticonvulsant and anti-anxiety
CLOTTRIMAZOLE	Gyne-Lotrimin, Lotrimin, Mycelex, Mycelex-G	Antifungal drug
CLOXACILLIN	Cloxapen, Tegopen	Penicillin-resistant antibiotic
CODEINE	Empirin w/ codeine, Phenaphen, Tylenol 3	Narcotic analgesic, antidiarrheal, cough suppressant
COLCHICINE	ColBenemid	Antigout medication
COLESTIPOL	Colestid	Lipid-lowering drug
COLISTIN	Coly-Mycin S	Antibiotic
CONJUGATED ESTROGENS	Premarin, Progens, Esprogyn, Milprem, PMB	Female sex hormone
CORTISONE	Cortone	Corticosteroid
COSYNTROPIN	Cortrosyn	Pituitary Hormone
CROMOLYN SODIUM	Intal, Nasalcrom, Opticrom, Gastrocom	Anti-Allergy drug used for asthma / allergic Rhinitis, systemic mastocytosis
CYANOCOBALAMIN	Vitamin B-12	Vitamin for anemia
CYCLOBENZAPRINE	Flexeril	Skeletal muscle relaxant
CYCLOPHOSPHAMIDE	Cytosan, Neosar	Anticancer drug
CYCLOSPORINE	Sandimmune, Neoral	Immunosuppressant
CYCLOTHIAZIDE	Anhydron	Antihypertensive
CYPROHEPTADINE	Periactin	Antihistamine
DALTEPARIN SODIUM	Fragmin	Antithrombotic agent for Deep Vein Thrombosis
DANAZOL	Danocrine	Synthetic hormone for menstrual disorders
DANTROLENE	Dantrium	Hyperthermia

GENERIC NAME	BRAND NAME	INDICATIONS
DAPSONE	Same	Antibacterial for leprosy, dermatitis herpetiformis
ddC	HIVID	Antiviral for HIV
DELAVIRDINE MESYLATE	Rescriptor	Reverse transcriptase inhibitor
DEMULEN	Demulen	Oral contraceptive
DESIPRAMINE	Norpramin, Pertofrane	Tricyclic antidepressant
DESMOPRESSIN	DDAVP	Antidiuretic hormone for nocturia from diabetes
DEXAMETHASONE	Decadron, Dalalone,	Glucocorticoid steroid
DEXFENFLURAMINE	Redux	Serotonin reuptake drug
DEXRAZOXANE HCl	Zinecard	Anthracycline-induced cardiomyopathy
DEXTRAN	Gentran, Macrodex	Volume Expander
DEXTROMETHORPHAN	Formula 44, Robitussin-DM, Sucrets, Benylin DM	Cough suppressant
DIAZEPAM	Valium, Valrelease	Benzodiazepine anti-anxiety, anticonvulsant drug
DICLOFENAC (and with misoprostol)	Voltaren, Arthrotec	NSAID
DICLOXACILLIN	Dynapen, Dycill	Penicillin-resistant Antibiotic
DICUMAROL	Dicumarol	Anticoagulant
DICYCLOMINE	Antispas, Bentyl, Nequaess	Antispasmodic, antidiarrheal drug
DIETHYLPROPION	Tepanil	Stimulant
DIETHYLSTILBESTROL	Stilbestrol	Female sex hormone
DIFLUNISAL	Dolobid	NSAID
DIGITOXIN	Crystodigin, Purodigin	Cardiac Glycoside / Digitalis drug
DIGOXIN	Lanoxicaps Lanoxin	Cardiac Glycoside / Cardiac Glycoside
DIOVAN	Valsartan	ACE Inhibitor for hypertension
DILTIAZEM	Cardizem	Calcium channel blocker drug
DIMENHYDRINATE	Dramamine	Antihistamine / anti-emetic drug
DIPHENHYDRAMINE	Benadryl, Bendylate, Benylin, Valdrene	Antihistamine, anti-emetic, Antiparkinson, sleep drug
DIPHENOXYLATE	Lomotil	Narcotic antidiarrheal drug
DIHYDROCODEINE	Synalgos-DC	Narcotic analgesic
DYPHYLLINE	Dilor 200/400/Elixir	Xanthine bronchodilator

GENERIC NAME	BRAND NAME	INDICATIONS
DIPYRIDAMOLE	Persantine	Antiplatelet drug, vasodilator
DIRITHROMYCIN	Dynabac	Macrolide antibiotic
DISOPYRAMIDE	Norpace (CR)	Anti-arrhythmic drug
DISULFIRAM	Antabuse	Alcohol abuse deterrent
DOBUTAMINE	Dobutrex	Vasopressor- cardiogenic
DNase	Pulmozyme	Cystic fibrosis drug which dissolves lung secretions
DONEPEZIL HCl	Aricept	Cholinesterase inhibitor for Alzheimer's
DOPAMINE HCl	Intropin	Inotropic and vasopressor
DOXACURIUM	Nuromax	Nondepolarizing paralytic
DOXEPIN	Adapin, Sinequan	Tricyclic antidepressant
DOXYCYCLINE	Doryx, Vibramycin	Tetracycline antibiotic
DRONABINOL	Marinol	Appetite suppressant
DROPERIDOL	Inapsine	Major tranquilizer/sedative
DYPHILLINE	Lufyllin	Bronchodilator
ECONAZOLE	Spectazole	Antifungal
ENALAPRIL	Vasotec	ACE Inhibitor vasodilator, antihypertensive drug
ENCAINIDE	Enkaid	Type 1c antiarrhythmic
ENOXAPARIN	Lovenox	Prevention of DVT
EPHEDRINE	Bronkoxir, Marax, Bofedrol, Tedral	Bronchodilator, decongestant, vasopressor
EPINEPHRINE	Bronk-Aid mist, Adrenalin, Primatene	Bronchodilator, vasopressor, cardiac stimulant
ERGOLOIDS	Hydergine	Improves mentation in elderly
ERGOTAMINE	Ergomar, Ergotamine, Bellergal, Cafergot	Medication for migraines
ERYTHRITYL T-NITRATE	Cardilate	Long acting nitrate
ERYTHROMYCIN	E-Mycin, E-Mycin 333, Eryc, Eryc 125	Antibiotic
ESMOLOL	Brevibloc	Cardioselective beta blocker
ESTRADIOL	Delestrogen, Depo-Estradiol, Estrace, Valergen	Female sex hormone
ESTROPIPATE	Ogen	Estrogen for menopause
ETHACRYNIC ACID	Edecrin	Loop diuretic

GENERIC NAME	BRAND NAME	INDICATIONS
ETHAMBUTOL	Myambutol	Anti-tuberculosis drug
ETHINAMATE	Valmid	Sedative
ETHAVERINE	Ethatab	Smooth muscle relaxer
ETHINYL ESTRADIOL	Nordette, Ortho-Novum	Female sex hormone, BCP
ETHYLNOREPINEPHRINE	Bronkephrine	Bronchodilator
ETHIONAMIDE	Trecator-SC	Anti-tuberculosis drug
ETIDRONATE DISODIUM	Didronel	Paget's disease of bone
ETODOLAC	Lodine 400 / 500	NSAID
ETOMIDATE	Amidate	Sedative for rapid sequence induction
ETHOSUXIMIDE	Zarontin	Anticonvulsant
ETRETINATE	Tegison	Drug for psoriasis
FAMOTIDINE	Pepcid	H2 blocker for ulcers
FELBAMATE	Felbatol	Anti-epileptic
FELODIPINE	Renedil	Calcium channel blocker
FENFLURAMINE / PHENTERMINE	Fen/Phen	Appetite suppressant
FENFLURAMINE	Pondimin	Stimulant
FENOLDOPAM MESYLATE	Corlopam	Antihypertensive agent
FENOPROFEN	Nalfon	NSAID
FENTANYL	Duragesic, Sublimaze	Narcotic analgesic
FEXOFENADINE HCl	Allegra	Nonsedating antihistamine
FINASTERIDE	Proscar	Prostatic hypertrophy
FLAVOXATE	Urispas	Urinary antispasmodic analgesic drug
FLECAINIDE	Tambocor	Type 1c antiarrhythmic
FLUCYTOSINE	Ancobon	Antifungal agent
FLUMAZENIL	Romazicon	Benzodiazepine reversal drug
FLUNISOLIDE	Aerobid, Nasalide	Steroid anti-inflammatory
FLUOROURACIL	Adrucil, Efudex, Fluoroplex	Anticancer drug
FLUOXETINE	Prozac	Heterocyclic antidepressant

GENERIC NAME	BRAND NAME	INDICATIONS
FLUPHENAZINE	Permitil, Prolixin	Phenothiazine antipsychotic and anti-emetic drug
FLURAZEPAM	Dalmane	Benzodiazepine sleeping drug
FLURBIPROFEN	Ansaid	NSAID
FLUVOXAMINE	Luvox	Obsessive compulsive disorder
FOSFOMYCIN TRO.	Monurol	Urinary tract infections
FOSINOPRIL	Monopril	ACE inhibitor for HTN
FOSPHENYTOIN	Cerebyx	Anticonvulsant
FUROSEMIDE	Lasix	Loop diuretic
GABAPENTIN	Neurontin	Partial seizures
GANCICLOVIR	Cytovene	Cytomegalovirus / ARC/ AIDS
GEMFIBROZIL	Lopid	Lipid-lowering drug
GENTAMICIN	Garamycin	Aminoglycoside antibiotic
GLIMEPRIDE	Amaryl	Oral diabetic agent
GLIPIZIDE	Glucotrol XL	Oral antidiabetic drug
GLUCAGON	Glucagon	Antihypoglycemic agent
GLYBURIDE	DiaBeta, Glynase Micronase	Oral antidiabetic drug
GRAMICIDIN	Cortisporin cream, Neosporin	Antibiotic
GRANISETRON	Kytril	Antiemetic for CA
GRISEOFULVIN	Fulvicin P/G, Gris-Peg, Grifulvin	Antifungal drug
GUANADREL	Hylorel	Sympatholytic anti-HTN agent
GUANETHIDINE	Ismelin	Sympatholytic anti-HTN agent
HALAZEPAM	Paxipam	Benzodiazepine hypnotic
HALOPERIDOL	Haldol	Phenothiazine / Butyrophenone antipsychotic
HEPARIN	Calciparine, Lipo, Hepin Liquaemin,	Anticoagulant
HCG (Human Chorionic Gonadotropin)	Secules, Pregnyl	Infertility drug
HYDRALAZINE	Apresoline, Ser-Ap-Es, Unipres	Antihypertensive drug
HYDROCHLOROTHIAZIDE	Hydrodiuril, Thiuretic, Aldoril	Thiazide diuretic
HYDROCODONE (and with Ibuprofen)	Vicodin, Vicoprofen	Synthetic narcotic analgesic

GENERIC NAME	BRAND NAME	INDICATIONS
HYDROCORTISONE	Solu-Cortef, Hytone, Cortaid	Corticosteroid
HYDROFLUMETHIAZIDE	Salutensin	Antihypertensive diuretic
HYDROMORPHONE	Dilaudid	Narcotic analgesic
HYDROXYZINE	Atarax, Durrax, Vistaril	Antihistamine / Sedative agent
HYOSCYAMINE	Cystospaz	Urinary tract antispasmodic
IBUPROFEN	Advil, Motrin, Nuprin, Rufen	NSAID
IBUTILIDE SUMARATE	Corvert	Rapid conversion of Afib/Afibr
IDOXURIDINE	Liquifilm, Stoxil	Antiviral drug
IMIPENEM-CILASTATIN	Primaxin	Carbapenem antibiotic
IMIPRAMINE	Janimine, SK-Pramine, Tofranil	Tricyclic antidepressant
IMIQUIMOD	Aldara	Antiviral for Genital warts
INDOMETHACIN	Indocin, Indocin S.R.	NSAID
INSULIN	Lente insulin, Humulin(N&R) Novolin	Antidiabetic drug
INSULIN LISPRO	Humalog	Human insulin analog
INTERFERON	Betaseron	Immunologic agent for Multiple Sclerosis
IPRATROPIUM BROMIDE with Albuterol	Atrovent / Combivent	Anticholinergic type bronchodilator
IRBESARTAN	Avapro	Antihypertensive agent
ISOCARBOXAZID	Marplan	MAO Inhibitor antidepressant agent
ISOETHARINE	Bronkometer, Bronkosol	Beta-2 Bronchodilator
ISONIAZID	INH, Laniazid, Nydrazid, Teebaconin	Anti-tuberculosis drug
ISOPROTERENOL	Aerolone, Isuprel, Medihaler	Pure beta bronchodilator
ISOSORBIDE DINITRATE	Dilatrate SR, Iso-Bid, Isordil	Nitrate vasodilator
ISOXSUPRINE	Vasodilan	Beta vasodilator
ISOTRETINOIN	Accutane	Acne drug
ISOXSUPRINE	Vasodilan, Voxsuprine	Vasodilator, uterine relaxer
ISRADAPINE	Dynacirc	Calcium channel blocker
ITRACONAZOLE	Sporanox	Antifungal
KANAMYCIN	Kantrex	Aminoglycoside antibiotic

GENERIC NAME	BRAND NAME	INDICATIONS
KAOLIN-PECTIN	Kaopectate	Antidiarrheal
KCI	Slow-K, Ten-K	Potassium supplement
KETAMINE	Ketalar	Dissociative anesthetic
KETOCONAZOLE	Nizoral	Antifungal drug
KETOPROFEN	Orudis	NSAID
KETOROLAC	Toradol	NSAID
LABETALOL	Normodyne, Trandate	Alpha and Beta blocker for hypertension
LACTULOSE	Chronulac	Laxative
LAMIVUDINE	Epivir, 3TC	Antiviral for HIV
LAMOTRIGINE	Lamictal	Status epilepticus
LANSOPRAZOLE	Prevacid	Rx of duodenal ulcer
LATANOPROST	Xalatan	Reduces IOP in glaucoma
LEVODOPA	Larodopa, Dopar	Antiparkinsonian drug
LEVOFLOXACIN	Levaquin	Quinolone antimicrobial agent
LEVORPHANOL	Levorphan	Narcotic analgesic
LEVOTHYROXINE	Levothroid, Synthroid	Thyroid hormone
LEUCOVORIN CALCIUM	Leucovorin	Folic acid rescue agent
LIDOCAINE HCl	Xylocaine	Amide-type anesthetic
LINCOMYCIN	Lincocin	Lincosamide antibiotic
LINDANE	Kwell, Kwildane	Topical antiparasitic
LIOTHYRONINE	Cyronine, Cytomel	Thyroid hormone
LISINAPRIL	Prinivil, Prinzide	ACE Inhibitor
LITHIUM CARBONATE	Eskalith, Lithane, Lithobid, Lithonate, Lithotabs	Antimanic drug
LOPERAMIDE	Imodium	Antidiarrheal drug
LORAZEPAM	Ativan, Alzapam, Loraz	Benzodiazepine antianxiety and sleep drug
LYPRESSIN	Diapid	Nasal drug for diabetes insipidus
MANNITOL	Osmitrol	Osmotic diuretic
MAPROTILINE	Ludiomil	Tetracyclic antidepressant

GENERIC NAME	BRAND NAME	INDICATIONS
MEBENDAZOLE	Vermox	Anthelmintic (worms) drug
MECLIZINE	Antivert, Bonine, Ru-Vert-M	Antihistamine antiemetic drug
MECLOFENAMATE	Meclofen	NSAID
MEDROXYPROGESTERONE	Depo-Provera, Provera, Amen, Curretab, Cycrin	Female sex hormone / uterine hemorrhage
MEFENAMIC ACID	Ponstel	NSAID
MEGESTROL	Megace	Female Sex hormone / anti-cancer agent
MELPHALAN	Alkeran	Anti-cancer drug
MEPERIDINE	Demerol	Narcotic analgesic
MEPHENYTOIN	Mesantoin	Anticonvulsant
MEPROBAMATE	Equanil, Miltown, Meprospan, Equagesic	Non-benzodiazepine anti-anxiety drug
MERCAPTOPURINE	Purinethol	Anti-cancer drug
MEROPENEM	Merrem	Carbapenem antibiotic
MESALAMINE	Pentasa	Ulcerative colitis
METAPROTERENOL	Alupent, Metaprel	Sympathomimetic bronchodilator
METARAMINOL	Aramine	Vasopressor
METFORMIN HCl	Glucophage	Oral antidiabetic agent
METHADONE	Dolophine	Synthetic narcotic analgesic
METHICILLIN	Staphcillin	Penicillin-resistant antibiotic
METHIMAZOLE	Tapazole	Antithyroid drug
METHOCARBAMOL	Delaxin, Marbaxin, Robaxin	Muscle relaxant drug
METHOTREXATE	Folex, Mexate, Mexate AQ	Anti-cancer drug
METHOXSALEN	Oxsoalene	Psoriasis drug
METHYLCELLULOSE	Cologel	Laxative, antidiarrheal, tears
METHYLOTHIAZIDE	Aquatensin	Antihypertensive / diuretic
METHYLOTHIAZIDE With DESERPIDINE	Enduronyl	Antihypertensive compound
METHYLDOPA	Aldomet, Aldoclor, Aldoril	Antihypertensive drug
METHYLERGONOVINE	Methergine	Control of postpartum hemorrhage
METHYLPREDNISOLONE	Depo-Medrol, Solu-Medrol, Medrol Dosepak	Glucocorticoid steroid

GENERIC NAME	BRAND NAME	INDICATIONS
METHYLPHENIDATE HCl	Ritalin, Ritalin SR	CNS stimulant for ADD
METHYSERGIDE	Sansert	Drug for migraines
METOCLOPRAMIDE	Reglan	Gastrointestinal motility regulator, antiemetic drug
METOLAZONE	Diulo, Zaroxolyn	Thiazide diuretic
METOPROLOL	Lopressor, Betaloc	Beta blocker
METRONIDAZOLE	Flagyl, Metryl 500, Protostat, Satric 500	Antibacterial and antiprotozoal drug
METYROSINE	Demser	Antihypertensive
MEXILETINE	Mexitil	Type 1b antiarrhythmic
MEZLOCILLIN	Mezlin	Antipseudomonal penicillin
MIBEFRADIL 2HCl	Posicor	Calcium channel blocker
MICONAZOLE	Micatin, Monistat 3, Monistat 7	Antifungal drug
MIDAZOLAM	Versed	Benzodiazepine sedative
MIDODRINE HCl	ProAmatine, Gaitron	Orthostatic hypotension
MILRINONE	Corotrope	Phosphodiesterase inhibitor
MINOXIDIL	Loniten, Rogaine	Antihypertensive / topical agent for hair growth
MIRTAZAPINE	Remeron	Antidepressant
MISOPROSTOL	Cytotec	Antiulcer agent for NSAIDS
MOLINDONE	Moban	Tranquilizer
MOMETASONE FUROATE	Nasonex	Allergic Rhinitis
MORPHINE SULFATE	Morphine, MS-Contin	Narcotic analgesic
NABUMETONE	Relafen	NSAID
NADOLOL	Corgard	Beta blocker
NAFCILLIN	Nafcil, Unipen	Penicillin-resistant antibiotic
NALBUPHINE	Nubain	Non-schedule synthetic narcotic
NALIDIXIC ACID	NegGram	Antibiotic
NALOXONE	Narcan	Opioid antagonist
NAPROXEN	Anaprox, Naprosyn, Aleve	NSAID
NEDOCROMIL Na	Tilade	Bronchial asthma

GENERIC NAME	BRAND NAME	INDICATIONS
NELFINAVIR MESYLATE	Viracept	Protease inhibitor for HIV
NEOMYCIN	Mycifradin, Neosporin, Cortisporin	Aminoglycoside antibiotic and lipid lowering drug
NEOSTIGMINE	Prostigmin	Drug for myasthenia gravis
NEVIRAPINE	Viramune	Reverse transcriptase inhibitor
NICARDIPINE	Cardene	Calcium channel blocker
NIACIN	Vitamin B-3	Serum cholesterol reducer
NICLOSAMIDE	Niclocide	Anthelmintic drug
NIFEDIPINE	Procardia, Adalat	Calcium channel blocker
NILUTAMIDE	Nilandron	Antiandrogen for prostate CA
NIMODIPINE	Nimotop	Calcium channel blocker
NISOLDIPINE	Sular	Calcium channel blocker
NITROFURANTOIN	Furadantin, Macrochantin	Antibacterial drug
NITROGLYCERIN	Nitrostat, Deponit	Arterial/venous vasodilator
NITROPRUSSIDE	Nipride, Nitropress	Antihypertensive
NOREPINEPHRINE	Levophed	Vasopressor
NORETHYNODREL	Enovid	Oral contraceptive
NORFLOXIN	Noroxin	Fluoroquinolone antibiotic
NORGESTREL	Ovette, Lo/Ovral	Female sex hormone
NYLIDRIN	Arlidin	Beta vasodilator
NYSTATIN	Mycostatin, Mykinac, Nilstat	Antifungal drug
OCTREOTIDE ACETATE	Sandostatin	Growth hormone inhibitor
OFLOXIIIN	Floxin	Fluoroquinolone antibiotic
OLANZAPINE	Zyprexa	Antipsychotic agent
OLOPATADINE	Patanol	Allergic conjunctivitis
OMEPRAZOLE	Prilosec	Suppresses gastric secretions
ORPHENADRINE	Disipal, Norflex	Anticholinergic muscle relaxant, anitiparkinson drug
OXACILLIN	Bactocill	Penicillin-resistant antibiotic
OXANDROLONE	Anavar	Anabolic steroid

GENERIC NAME	BRAND NAME	INDICATIONS
OXAZEPAM	Serax	Benzodiazepine anti-anxiety drug
OXICONAZOLE	Oxistat	Topical Antifungal
OXPRENOLOL	Trasicor	Beta blocker for angina
OXTRIPHYLLINE	Choledyl, Brondecon	Xanthine bronchodilator
OXYCODONE	Percodan, Oxycontin	Narcotic analgesic
OXYCODONE w / APAP	Tylox	Narcotic analgesic compound
OXYMETAZOLINE	Afrin	Nasal topical vasoconstrictor
OXYTETRACYCLINE	Terramycin, Urobiotic, Robitet,	Tetracycline antibiotic
PAMIDRONATE DISODIUM	Aredia	Hypercalcemia
PANCURONIUM	Pavulon	Nondepolarizing paralytic
PAPAVERINE	Pavabid	Cerebrovascular vasodilator
PARAMETHADIONE	Paradione	Anti-epileptic agent
PAROXETINE	Paxil	Antidepressant
PARGYLINE	Eutonyl	MAO inhibitor
PEMOLINE	Cylert	Stimulant for Attention Deficit Disorder
PENBUTOLOL	Levatol	Beta blocker for HTN / angina
PENCICLOVIR	Denavir	Antiviral drug for Herpes
PENICILLAMINE	Cuprimine, Depen	Antirheumatic / chelating drug
PENICILLIN G	Bicillin, Pentids, Wycillin	Penicillin antibiotic
PENICILLIN V	Ledercillin-VK, Pen-Vee-K,	Penicillin antibiotic
PENTAMIDINE	Nebupent	Anti-protozoal agent for P CP Pneumonia
PENTAERYTHRITOL TET.	Pentritol	Long-acting nitrate
PENTOBARBITAL	Nembutal	Barbiturate sedative
PENTOSAN POLYSUFATE	Elmiron	Interstitial cystitis
PENTOXIFYLLINE	Trental	Vasodilator for PVD
PERGOLIDE	Permax	Dopaminergic stimulant
PERPHENAZINE	Trilafon	Antipsychotic, antiemetic phenothiazine drug
PHENACEMIDE	Phenurone	Antiepileptic

GENERIC NAME	BRAND NAME	INDICATIONS
PHENAZOPYRIDINE	Pyridiate, Pyridium, Urodine, Urogesic	Urinary analgesic
PHENELZINE	Nardil	MAO Inhibitor
PHENMETRAZINE	Preludin	Stimulant
PHENOBARBITAL	Barbita, Luminal, Bronkotabs, Donnatal	Barbiturate anticonvulsant
PHENTERMINE	Adipex-P, Obenix	Appetite suppressant
PHENYLBUTAZONE	Azolid, Butazolidin	NSAID
PHENYLEPHRINE	Alconefrin, Allerest Neo-Synephrine	Decongestant
PHENYLPROPANOLAMINE (and with) GUAIFENESIN	Dexatrim, Entex-LA, Propadrine	Decongestant, expectorant
PHENYTOIN	Dilantin	Anticonvulsant / antiarrhythmic
PHYTONADIONE	Aquamephyton, Mephyton	Hemostatic drug (Vitamin K) for control of bleeding disorders
PILOCARPINE	Adorbocarpine	Miotic drug for glaucoma
PINDOLOL	Visken	Beta blocker for HTN / angina
PIPERACILLIN	Pipracil, Zosyn	Antipseudomonal antibiotic
PIRBUTEROL	Maxair	Beta-2 stimulant for RAD
PIROXICAM	Feldene	NSAID
POLYTHIAZIDE	Renese	Antihypertensive
PORK THYROID HORM.	SPT	Hypothyroidism
POTASSIUM	Slow-K, Ten-K	Mineral supplement
PRALIDOXIME	Protopam	Reverses muscle weakness in OPP
PRAVASTATIN	Pravachol	Hypercholesteremia
PRAZEPAM	Centrax	Benzodiazepine anti-anxiety agent
PRAZIQUANTEL	Biltricide	Anthelmintic
PRazosin	Minipres, Minizide	Antihypertensive drug
PREDNISOLONE	AK-Tate, Prelone Pred Forte,	Corticosteroid
PREDNISON	Deltasone, Pred-5	Corticosteroid
PRIMAQUINE	Aralen phosphate with primaquine Phosphate	Antimalarial drug
PRIMIDONE	Myidone, Mysoline	Barbiturate type anticonvulsant
PROBENECID	Benemid, Proban	Drug for gout

GENERIC NAME	BRAND NAME	INDICATIONS
PROBUCOL	Lorelco	Lipid-lowering drug
PROCAINAMIDE	Procan SR, Pronestyl (SR)	Type 1 antiarrhythmic drug (atrial and ventricular)
PROCARBAZINE	Matulane	Anti-cancer drug
PROCHLORPERAZINE	Compazine, Combid	Phenothiazine anti-emetic / antipsychotic drug
PROCYCLIDINE	Kemadrin	Anticholinergic drug
PROMAZINE	Sparine	Phenothiazine
PROMETHAZINE	Phenergan, Mepergan,	Antihistamine / phenothiazine / anti-emetic drug
PROPOXYPHENE – NAPSYLATE	Darvon, Darvocet N-50 and 100, Lorcet, Wygesic	Narcotic analgesic
PROPAFENONE	Rhythmol	For control of severe ventricular dysrhythmia
PROPANOLOL	Inderal, Inderal -LA, Inderide	Non-cardioselective Beta blocker
PROPOFOL	Diprivan	Phenol derivative sedative
PROPYLTHIOURACIL	Same	Antithyroid drug
PROTRIPTYLINE	Vivactil	Tricyclic antidepressant
PYRANTEL	Antiminth	Anthelmintic
PYRAZINAMIDE	Same	Antituberculosis drug
PYRIDOSTIGMINE	Mestinon, Regonol	Myasthenia gravis drug
PRIMETHAMINE	Daraprim, Fansidar	Anti-malarial
QUAZEPAM	Doral	Benzodiazepine hypnotic
QUETIAPINE FUMARATE	Seroquel	Antipsychotic
QUINACRINE	Atabrine	Antiprotozoal drug
QUINAPRIL	Accupril	ACE inhibitor
QUINIDINE	Duraquin, Quinidex, Quinaglute	Anti-arrhythmic
QUININE	Quinamm	Anti-malarial
RALOXIFENE HCl	Evista	Prevention of osteoporosis
RANITIDINE	Zantac	H2 Blocker, anti-ulcer drug
RAUWOLFIA	Rauzide	Antihypertensive
ROCURONIUM	Zemuron	Nondepolarizing paralytic
RESERPINE	Serpasil, Serapes	Antihypertensive / tranquilizer

GENERIC NAME	BRAND NAME	INDICATIONS
RETEPLASE	Retavase	Tissue plasminogen activator
REMIFENTANIL HCl	Ultiva	Mu-opioid agonist narcotic analgesic
RIFABUTIN	Mycobutin	Antibiotic for AIDS
RIFAMPIN	Rifadin, Rimactane	Anti-tuberculosis drug
RIMEXOLONE	Vexol	Postoperative ocular inflammation
RISPERIDONE	Risperdal	Antipsychotic
RITODRINE	Yutopar	Uterine muscle relaxer
SAQUINAVIR MESYLATE	Invirase, Forovase	Protease inhibitor for HIV
SALSALATE	Disalcid	NSAID
SCOPOLAMINE	Plexonal, Transderm Scop	Antispasmodic
SECOBARBITAL	Seconal	Barbiturate sleeping drug
SELEGILINE	Eldepryl	MAO inhibitor for Parkinson's
SIBUTRAMINE HCl	Meridia C-IV	Weight loss agent
SLOW-MAG	Magnesium Chloride	Magnesium supplement
SODIUM BICARBONATE	Same	Alkalinization agent
SOTALOL	Betapace	Beta blocker
SPARFLOXACIN	Zagan	Aminodifluoroquinolone
SPIRONOLACTONE	Alatone, Aldactone	Potassium sparing diuretic
SUCCINYLCHOLINE	Anectine, Sucostrin	Depolarizing paralytic
SUCRALFATE	Carafate	Ulcer-healing drug
SULFACETAMIDE	Cetamide, Metimyd, Vasocidin	Sulfonamide anti-bacterial drug
SULFAMETHOXAZOLE	Gantanol, Septra	Sulfonamide anti-bacterial
SULFASALAZINE	Azulfidine, SAS 500	Inflammatory bowel disease / antirheumatic drug
SUFENTANIL	Sufenta	Opioid analgesic
SULFINPYRAZONE	Anturane	Drug for gout
SULFISOXAZOLE	Gantrisin, Vagila	Sulfonamide antibacterial
SULINDAC	Clinoril	NSAID
SUMATRIPTAN SUCCINATE	Imitrex	Vasoconstrictor for reversal of migraines

GENERIC NAME	BRAND NAME	INDICATIONS
TACROLIMUS	Prograf	Immunosuppressant
TACTRINE	Cognex	Alzheimer's disease
TAMOXIFEN	Nolvadex	Anti-cancer drug
TAMSULOSIN HCl	Flomax	Benign prostatic hyperplasia
TEMAZEPAM	Restoril	Benzodiazepine sleep drug
TERAZOSIN	Hytrin, Vasocard	Alpha-1 blocker antihypertensive
TERBUTALINE	Brethaire, Brethine, Bricanyl	Sympathomimetic bronchodilator
TERBINAFINE HCl	Lamisil	Antifungal
TERCONAZOLE	Terazol	Antimicrobial
TERFENADINE	Seldane	Antihistamine
TERPIN-HYDRATE	Same	Expectorant
TESTOSTERONE	Delatestryl, Depo-Testosterone, Testred	Male sex hormone
TETRACYCLINE	Achromycin-V, Panmycin, Robitet	Tetracycline antibiotic
TETRAHYDROZOLINE	Murine plus, Visine	Sympathomimetic decongestant
THEOPHYLLINE	Slo-Bid, Slo-Phyllin, Theo-Dur, Accurbron	Xanthine derivative – bronchodilator
THIABENDAZOLE	Mintezol	Anthelmintic
THIETHYLPERAZINE	Torecan	Phenothiazine antiemetic
THIOPENTAL SODIUM	Pentothal	Barbiturate
THIORIDAZINE	Mellaril, Mellaril-S, SK Thioridazine	Phenothiazine antipsychotic drug
THYROID	Armour thyroid	Thyroid hormone
TICARCILLIN / CLAV.	Timentin, Ticar	Antipseudomonal antibiotic
TICLOPIDINE HCl	Ticlid	Platelet-aggregation inhibitor
TILUDRONATE	Skelid	Paget's disease of the bone
TIMOLOL	Blocadren, Timoptic	Beta blocker / glaucoma drug
TOBRAMYCIN	Tobrex Ophthalmic, Nebcin	Aminoglycoside
TOCAINIDE	Tonocard	Ventricular arrhythmias
TOLAZAMIDE	Tolinase	Oral anti-diabetic drug
TOLBUTAMIDE	Orinase, Oramide	Anti-diabetic drug

GENERIC NAME	BRAND NAME	INDICATIONS
TOLMETIN	Tolectin (DS)	NSAID
TOLNAFTATE	Tinactin	Antifungal drug
TOPIRAMATE	Topimax	Partial seizures
TORSEMIDE	Demadex	Potent diuretic
TRAMADOL HCl	Ultram	NSAID – Opioid like pain medication
TRAZODONE	Desyrel	Antidepressant
TRETINOIN	Retin-A	Acne drug
TRIAMCINOLONE	Aristocort, Azmacort, Kenalog	Corticosteroid
TRIAMTERENE / HCTZ	Dyrenium, Dyazide, Maxzide, Dyrenium	Potassium-sparing diuretic
TRIAZOLAM	Halcion	Benzodiazepine sleeping agent
TRICHLOMETHIAZIDE	Metahydrin	Antihypertensive / diuretic
TRIFLUOPERAZINE	Stelazine	Major tranquilizer
TRIFLURIDINE	Viroptic	Antiviral drug
TRIHENXYPHENIDYL	Artane, Tremmin, Trihexane	Anti-cholinergic, antiparkinsonian drug
TRIMEPRAZINE	Temaril	Antihistamine
TRIMETHOBENZAMIDE	Tigan	Anti-emetic
TRIMETHOPRIM w/ SULFAMETHOXAZOLE	Proloprim, Bactrim	Antibacterial drug
TRIMIPRAMINE	Surmontil	Tricyclic antidepressant
TRIPROLIDINE	Actidil, Actifed	Antihistamine
TROGLITAZONE	Rezulin	Oral antihyperglycemic agent
TROVAFLOXACIN	Trovan	Antibiotic
UROKINASE	Abbokinase	Thrombolytic agent
URSODIOL	Actigall	Gall stone dissolver
VALACICLOVIR	Valtrex	Antiviral
VALPROIC ACID	Depakene, Depakote	Anticonvulsant
VALSARTAN	Diovan	Antihypertensive agent
VANCOMYCIN	Vancocin	Glycopeptide antibiotic
VASOPRESSIN	Pitressin	Antidiuretic hormone

GENERIC NAME	BRAND NAME	INDICATIONS
VECURONIUM	Norcuron	Nondepolarizing paralytic
VENLAFAXINE HCl	Effexor XR	Antidepressant
VERAPAMIL	Calan, Isoptin, Covers-HS	Anti-anginal, anti-arrhythmic drug
WARFARIN	Coumadin	Anticoagulant
YOHIMBINE	Yohimex, Actibine	Sympathicolytic / Cholinergic
ZAFIRLUKAST	Accolate	Leukotriene receptor agent
ZALCITABINE	Hivid	Antiviral for HIV
ZIDOVUDINE (AZT)	Retrovir	Antiviral
ZILEUTON	Zyflo	Leukotriene inhibitor- asthma
ZOLPIDEM	Ambien	Hypnotic
ZOLMITRIPTAN	Zomig	Acute Tx of Migraines

Helpful Acronym List

Paramedic	◆
EMT Intermediate	◆
EMT Basic	◆

Conditions Caused by Toxins

Anion Gap Metabolic Acidosis

A – Alcoholic Ketoacidosis

C – Carbon Monoxide, CN

A - ASA

T – Toluene

M - Methanol

U - Uremia

D – DKA

P – Paraldehyde, Phenformin

I – Iron, INH

L – Lactic Acidosis

E – Ethylene Glycol

Bradycardia

P – Propranolol and beta blockers

A – Anticholinesterase drugs

C – Clonidine, Ca Channel Blockers

E – Ethanol & Alcohols

D – Digoxin, Darvon and other opiates

Dialysis Requiring Toxins

S - Salicylates

T - Theophylline

U – Uremia Inducing Agents

M - Methanol

B - Barbituates

L - Lithium

E – Ethylene Glycol

Diaphoresis

- S - Sympathomimetics
- O - Organophosphates
- A - ASA
- P - PCP

Hypertension

- C - Cocaine
- T - Theophylline
- S - Sympathomimetics
- C - Caffeine
- A – Anticholinergics, Amphetamines
- N - Nicotine

Hyperthermia

- N – Neuroleptics (NMS), Nicotine
- A – Antihistamines
- S – Salicylates, Sympathomimetics
- A – Anticholinergics, Antidepressants

Hypotension

- C - Clonidine
- R – Reserpine, Antihypertensives
- A – Antidepressants
- S – Sedative Hypnotics
- H - Heroin

Hypothermia

- C – Carbon Monoxide
- O – Opiates
- O – Oral Hypoglycemics, Insulin
- L – Liquor
- S – Sedative Hypnotic

Miosis (Pin Point Pupils)

- C – Cholinergics, Clonidine
- O – Opiates, Organophosphates
- P – Phenothiazines, Pilocarpine, Pontine Bleed
- S – Sedative Hypnotics

Mydriasis (Dilated Pupils)

- A - Antihistamines
- A - Antidepressants
- A – Anticholinergics, Atropine
- S - Sympathomimetics

Seizures

- O - Organophosphates
- T – Tricyclic Antidepressants
- I – INH, Insulin
- S - Sympathomimetics

- C – Camphor, Cocaine
- A – Amphetamines
- M - Methylxanthines
- P - PCP
- B – Beta Blockers
- E – Ethanol Withdrawal
- L - Lithium
- L - Lead

Tachycardia

- F – Free Base (Cocaine)
- A – Anticholinergics, Antihistamines, Amphetamines
- S – Sympathomimetics
- T – Theophylline

Toxidromes caused by Classes of Medications

Anticholinergics

Hot as a Hare
Red as a Beet
Dry as a Bone
Blind as a Bat
Mad as a Hatter

Cholinergic Agents

S - Salivation
L - Lacrimation
U - Urination
G - Gastroenteritis
B – Bronchorrhea
A – Abdominal Cramps
M - Miosis

Opiates

B – Breathing Compromise
U - Unresponsive
B - Bradycardia
L – Low Blood Pressure
S – Small Pupils

Sympathomimetics

T - Tachycardia
H - Hypertension
E – Elevated Temperature

D – Diaphoresis
E – Enlarged Pupils
A - Anxious

Overdose Antidotes

Paramedic	◆
EMT Intermediate	◆
EMT Basic	◆

ASA – Alkalinization
 Benzodiazepines - Flumazenil
 Beta Blockers – Beta Agonists
 Calcium Channel Blockers – Calcium
 Carbon Monoxide – Oxygen
 Coumadin – Vitamin K and FFP
 Cyanide – Lilly Kit (Nitrates)
 Digoxin – Digibind (FAB)
 Heparin – Protamine Sulfate
 Iron – Deferoxime
 Mercury – BAL
 Methanol and Ethylene Glycol – ETOH
 Methemoglobinemia – Methylene Blue
 Opiates – Narcan or Nalbuphine
 Organophosphates – Atropine, 2-PAM
 Sympathomimetics – Beta Blockers
 Thyroid – Beta Blockers
 Tricyclic Antidepressants – Bicarbonate, Alkalinization
 Tylenol – Mucomyst

Recommended Drug Dosages

Paramedic	◆
EMT Intermediate	◆
EMT Basic	◆

This is a compilation of all of the medications used in the guidelines with the associated adult and child dosages.

As you read this section and memorize the dosages it should be noted that when dosing a child you should never exceed the adult dose even if your calculated dosage is higher.

<u>Medication</u>	<u>Adult Dosing</u>	<u>Pediatric Dosing</u>
Albuterol	2.5-7.5mg	Same
Atropine	0.5-1mg IV	0.02 mg/kg IV Min. 0.1mg
Bicarbonate (Sodium)	1 mEq/kg IV	Same
Charcoal	50 grams PO	1 gram/kg PO
Dextrose	50% 25 Grams IV	10% 5ml/kg IV
Diazepam	5-20mg IV/IM	0.1-0.3 mg/kg IV
Diazepam (Rectal)	Same	0.5 mg/kg Rectal
Diphenhydramine	25-50 mg IV/IM	1-2 mg/kg IV/IM to 50mg Max
Dopamine Drip	2-20 mcg/kg/min	Same
Epi Drip	2-10 mcg/min IV	.01-1 mcg/kg/min IV
Epinephrine (IV)	1-5 mg IV (1:10,000)	0.01 mg/kg IV (1:10,000)
Epinephrine (SQ)	0.3 SQ (1:1000)	0.01 mg/kg SQ (1:1000)
Furosemide	40mg IV	1 mg/kg IV
Glucagon	1mg IM	0.1 mg/kg IM
Haloperidol	5-10 mg IM	None
Haloperidol	2-5mg IV	None
Lidocaine	0.5-1.5 mg/kg IV	1 mg/kg IV
Lidocaine Drip	2-4 mg/min	20-50 mcg/kg/min
Meperidine	25-125 mg IV/IM	1-1.5 mg/kg IV/IM
Midazolam (IM)	5 mg	0.05-0.2 mg/kg IM
Midazolam (IV)	1-10 mg IV	0.05-0.2 mg/kg IV
Midazolam (PO/N)	0.3-0.7 mg/kg PO/Intranasal	Same
Morphine	2-15 mg IV/IM	0.1-0.2 mg/kg IV/IM
Naloxone	0.4-2 mg IV/IM	0.1 mg/kg IV/IM
Nitroglycerin	0.4 mg SL	None
NS Normal Saline	1000 cc IV Bolus	20 cc/kg IV Bolus
Ondansetron	4-8 mg IV	0.1 mg/kg IV > 2yrs old
Oxytocin	10 units IM	None
Pralidoxime	600 mg IV/IM	50 mg/kg IV/IM
Promethazine	12.5-25mg IV	.25 mg/kg IV

System Registered Organizations

Paramedic	◆
EMT Intermediate	◆
EMT Basic	◆

This is the most up to date current listings of agencies, air ambulances, dispatch centers and hospitals in Utah County. The current list reflects the agencies currently participating in the Utah County EMS Committee.

<u>AGENCY</u>	<u>CONTACT</u>	<u>ADDRESS</u>	<u>City</u>	<u>Zip Code</u>	<u>PHONE</u>	<u>LEVEL I</u>
American Fork	Jay Christensen	96 N Center	American Fork	84003	763-3045	AI-Ground Amb
Cedar Fort	Don Miller	3698 Adams	Cedar Valley	84013	631-6297	1st Responder
Eagle Mountain	Kevin McCarthy	1502 E Harrier St,	Eagle Mountain	84043	420-2249	P- Rescue, AI - Ground Amb
Elk Ridge	Kamile Peterson	235 N Loafer Cyn Rd	Elk Ridge	84651	423-2205	1st Responder
Genola	William McMullin	740 E Hwy	Genola	84655	420-5170	1st Responder
Lehi	Ricky Evans	72 N. Center	Lehi	84043	768-7130	AI-Ground
Lone Peak	Kirk Mittelman	410 Ridge Ln	Payson	84651	372-0528	P-Rescue
Mapleton	Stephanie Olsen	125 W 400 North	Mapleton	84664	369-8441	I- Ground Amb.
North Fork	Kenny Johnson	RR3 Box B-1	Sundance	84604	361-5800	I- Ground Amb
Orem	Don Rieske	95 E Center	Orem	84057	229-7280	Paramedic
Payson	Scott Spencer	300 E 100 North	Payson	84651	465-5252	AI- Ground Amb
Pleasant Grove	Clark Nielsen	87 E 100 South	Pleasant Grove	84062	785-3506	P- Rescue, AI - Ground Amb
Provo	Dale Maughan	80 S 300 West	Provo	84601	852-6339	Paramedic
Salem City	Ermin Stone	185 E Melonie Ln	Salem	84653	423-1742	AI-Ground Amb
Santaquin	Lee Savage	80 W 300 South	Santaquin	84655		AI - Ground Amb
Saratoga Springs	Tayna Kahn	1748 Amanda Lane	Saratoga Springs		766-0974	1st Responder
Spanish Fork	Don Thomas	350 N Main St	Spanish Fork	85660	798-3060	AI- Ground Amb.
Springville	Phil Whitney	45 S Main	Springville	84662	489-9421	I- Ground Amb.
UHP	Brett Christensen	763 N 1370 West	Orem	84057	234-8285	EMT Troopers
Utah County SAR	Tom Hodgson	3075 N Main	Spanish Fork	84660	404-1916	1st Responder
Woodland Hills	Joan Young	725 S Woodland Hills Dr	Woodland Hills	84653	423-7703	1st Responder

<u>AIR AMBULANCE</u>	<u>CONTACT</u>	<u>ADDRESS</u>	<u>City</u>	<u>Zip Code</u>	<u>PHONE</u>	<u>LEVEL I</u>
Air Med	Ken Matthews					AMTS
Life Flight	Mike Grenny					AMTS
<u>DISPATCH CENTERS</u>	<u>CONTACT</u>	<u>ADDRESS</u>	<u>City</u>	<u>Zip Code</u>	<u>PHONE</u>	<u>LEVEL I</u>
Orem Dispatch	Keldon Brown	95 E Center	Orem	84057	229-7257	Dispatch Center
Pleasant Grove	Sherri Atwood	87 E 100 South	Pleasant Grove	84062	785-3506	Dispatch Center
Provo	Jeff Lougee	48 S 300 West	Provo	84601	852-7260	Dispatch Center
Springville	Carol Huff	45 S Main 84662	Springville	84662	489-9421	Dispatch Center
Utah County Dispatch	Gladys Coomes	3075 N Main	Spanish Fork	85660	851-4170	Dispatch Center
<u>HOSPITALS</u>	<u>CONTACT</u>	<u>ADDRESS</u>	<u>City</u>	<u>Zip Code</u>	<u>PHONE</u>	<u>LEVEL I</u>
American Fork Hospital						
Mountainview Hospital	Brent Alvey				465-7190	Hospital
Orem Community						
Timpanogos Hospital						
Utah Valley RMC	Robin Ebmeyer	1034 N 500 West	Provo	84601	357-8389	Hospital
<u>MEDICAL DIRECTORS</u>	<u>CONTACT</u>	<u>ADDRESS</u>	<u>City</u>	<u>Zip Code</u>	<u>PHONE</u>	<u>LEVEL I</u>
AF Hospital EMS MD	Scott VanWagoner MD					
Eagle Mtn/PG/UC QA Dir	Mark Bair MD	6048 W Dry Creek Circle	Highland	84003	801-918-1144	Certified Medical Director
Lehi	Brad Bentley MD					
Orem	Eugene Zanolli MD				714-6570	
Provo, AF, Lone Peak, SAR	Keith Hooker MD				357-7002	Certified Medical Director
South County EMS	Brent Jones MD				465-7190	Certified Medical Director
Utah County Dispatch	Joseph Dinkins MD				465-7190	